VP-100BPS

JVC

SERVICE MANUAL

PCM DIGITAL AUDIO PROCESSOR

MODEL VP-100BPS **PAL/SECAM**

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This manual combines two single volumes; Service manual and Parts list.

No. 2778
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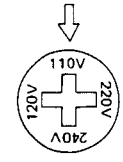
Safety Precautions

1. The design of this product contains special hardware, many circuits and components specially for safety purposes.
   For continued protection, no changes should be made to the original design unless authorized in writing by the manufacturer. Replacement parts must be identical to those used in the original circuits. Service should be performed by qualified personnel only.
2. Alterations of the design or circuitry of the product should not be made. Any design alterations or additions will void the manufacturer's warranty and will further relieve the manufacturer of responsibility for personal injury or property damage resulting therefrom.
3. Many electrical and mechanical parts in the product have special safety-related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in the parts list of Service manual. Electrical components having such features are identified by shading on the schematics and by (⚠) on the parts list in Service manual. The use of a substitute replacement which does not have the same safety characteristics as the recommended replacement part shown in the parts list in Service manual may create shock, fire, or other hazards.
4. The leads in the products are routed and dressed with ties, clamps, tubings, barriers and/or the like to be separated from live parts, high temperature parts, moving parts and/or sharp edges for the prevention of electric shock and fire hazard.
   When service is required, the original lead routing and dress should be observed, and they should be confirmed to be returned to normal, after re-assembling.
5. Leakage current check
   (Safety for electrical shock hazard)
   After re-assembling the product, always perform an isolation check on the exposed metal parts of the Products (antenna terminals, knobs, metal cabinet, screw heads, earphone jack, control shafts, etc.) to be sure the product is safe to operate without danger of electrical shock.
   Do not use a line isolation transformer during this check.
   - Plug the AC line cord directly into the AC outlet. Using a "Leakage Current Tester", measure the leakage current from each exposed metal part of the cabinet, particularly any exposed metal part having a return path to the chassis, to a known good earth ground (water pipe, etc.). Any leakage current must not exceed 0.5 mA AC (r.m.s.).
   - Alternate check method
     Plug the AC line cord directly into the AC outlet. Use an AC voltmeter having 1,000 ohms per volt or more sensitivity in the following manner. Connect a 1500 Ω 10 W resistor paralleled by a 0.15μF AC-type capacitor between an exposed metal part and a known good earth ground (water pipe, etc.).
     Measure the AC voltage across the resistor with the AC voltmeter.
     Move the resistor connection to each exposed metal part, particularly and exposed metal part having a return path to the chassis, and measure the AC voltage across the resistor. Now, reverse the plug in the AC outlet and repeat each measurement. Any voltage measured must not exceed 0.75 V AC (r.m.s.). This corresponds to 0.5 mA AC (r.m.s.).

CHECKING YOUR LINE VOLTAGE (For U.S. Military Market and Other Countries)
Before inserting the power plug, please check this setting to see that it corresponds with the line voltage in your area. If it doesn't, be sure to adjust the voltage selector switch to the proper setting before operating this equipment. The voltage selector switch is located on the rear panel.



CAUTION Before selecting the "Voltage selector switch" to proper voltage disconnect the power plug.

Features

- **Long hi-fi recordings are possible.**
  Recording and playback can be done in the VCR.
- **Designed with emphasis on sound quality.**
  The performance required of a PCM digital recorder/reproducer is fully assured.
- **Mixing recording using the two input systems is possible.**
  Line input: Normal audio input terminals.
  Mic input: Microphone connection jacks.
- **VIDEO input/output terminals allow automatic switching between PCM audio and video.**
  When the VCR and TV are connected via the VIDEO lines, the VCR is automatically connected to the TV for recording/playback when the VP-100BPS is switched off.
- **Simultaneous parallel recording using two VCRs is possible.**
  Parallel recording for backup and extended recording are possible.
- **Multi-function level indicator is provided.**
  All operating conditions can be monitored through a single indicator window.
- **Compact size and high packing-density.**
  Newly developed digital signal processing LSI ICs make the full performance possible even with a compact size.

Specifications

Circuit system : EIAJ standard digital audio processor
Digital section : Double error correction and interpolation, with MC system
Analog section : All-stage direct-coupled DC circuit
Signal format : Video signal conforming to PAL/SECAM TV signal format
Audio channels : 2-channel stereo
Sampling frequency : 44.1 kHz (+0.01 %, -0.11 %)
Quantization : 14-bit linear
Decoding : 14-bit linear
Recording time : 3 hrs. max (E-180, VHS SP mode)
Input section
AUDIO IN : Input impedance 47 kohms, 142 mV (-15 dB) with the line input adjustment knobs at 5.
VIDEO IN/PLAY: Input impedance 75 ohms, 1 Vp-p
VIDEO IN (TV) : Input impedance 75 ohms, 1 Vp-p
MIC IN : Input impedance 600 ohms, 1 mV (-15 dB) with the microphone input adjustment knobs at 5.
Output section
AUDIO OUT : Output impedance 100 ohms
FULL SCALE output voltage : 1.95 V rms
Max, output voltage : 2.8 V rms
Total harmonic distortion : 0.008 % (in playback, emphasis OFF, 1 kHz, 0 dB)
0.015 % (in recording/playback, emphasis OFF, 1 kHz, 0 dB)
0.007 % (in playback, emphasis ON, 1 kHz, 0 dB)
0.01 % (in recording/playback, emphasis ON, 1 kHz, 0 dB)
Frequency response : 5 Hz to 20 kHz, 10 Hz to 20 kHz (+0.3 dB, -0.6 dB)
Dynamic range : 86 dB
Separation : 80 dB
Wow and flutter : Less than measurable limit

Error correction system : MC format
Empahsis : ON/OFF switchable in recording mode and automatically switched in play mode.
VIDEO OUT/REC OUT (TV) : Output impedance 75 ohms 1 Vp-p (75 ohms termination)
Semiconductors
LSI ICs : 5
ICs : 59
Transistors : 103
Diodes : 37

GENERAL

Power supply : See table below.
Power consumption : See table below.
Dimensions : 340(W) x 72(H) x 305(D) mm (13-7/16" x 2-7/8" x 12")
Weight : 3.7 kg (8.1 lbs.)
Accessories : Audio signal cord (1.2 m) x 2
BNC-PIN cord (1.5 m) x 2

POWER SPECIFICATIONS

Countries	Line Voltage & Frequency	Power Consumption
EUROPE W. GERMANY	AC 220 V∿, 50 Hz	35 watts
U.K. AUSTRALIA	AC 240 V∿, 50 Hz	
OTHER AREAS	AC 110/120/220/240 V∿ selectable, 50/60 Hz	

Design and specifications subject to change without notice.

Names of Parts and Their Functions

Front panel

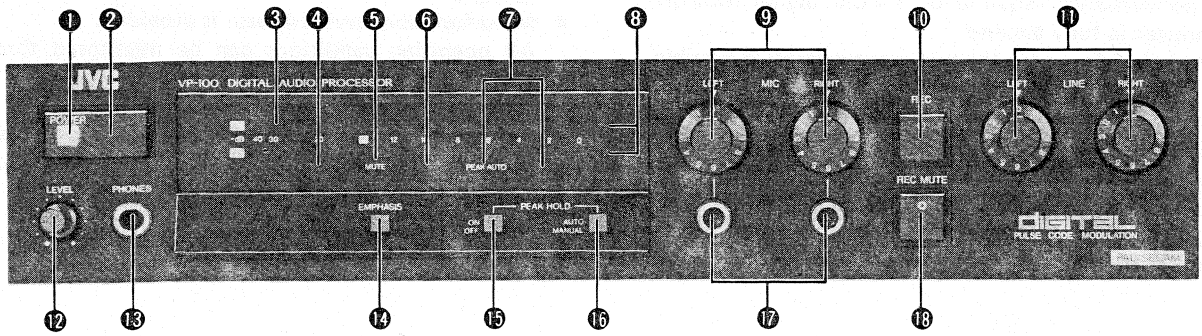


Fig. 1

❶ **POWER indicator**
When power is applied to unit, this indicator lights.

❷ **POWER button**
Press this button to turn power on or off.

❸ **Recording/playback level indicator**
Shows either the recording or playback level for the left (L) and right (R) channels independently over the range of -43 dB – 0 dB. The peak level can be held by pressing the PEAK HOLD button to activate the peak hold function.

❹ **OVER indicators**
When signals of more than 0 dB are input, these OVER indicators for the left and right channels light.

❺ **RECORDING indicator**
Lights when the REC button is pressed and goes off when the REC button is pressed again.

❻ **MUTE indicator**
Lights when no signal is input from the VCR during PCM playback or when the REC MUTE button is pressed to activate the record muting circuit during PCM recording.

❼ **EMPHASIS indicator**
Lights when the EMPHASIS button is pressed in the recording mode to activate the emphasis function. In the playback mode, this indicator lights automatically at the tape portions recorded with EMPHASIS signals.

❽ **PEAK AUTO/MANUAL indicator**
When the PEAK HOLD ON/OFF button is pressed after the power has been applied, the PEAK AUTO indicator lights. Then when the PEAK HOLD AUTO/MANUAL button is pressed, the PEAK MANUAL indicator lights.

❾ **Microphone input adjustment knobs (MIC LEFT/RIGHT)**
Use to adjust the microphone input level(s) when recording using microphone(s). When microphones are not used, turn these knobs fully to "0" (minimum).

❿ **Recording/playback select button (REC)**
Press this button so that the RECORDING indicator lights for recording and press it again so that the RECORDING indicator goes off for playback.

⓫ **Line input adjustment knobs (LINE LEFT/RIGHT)**
When the play mode is engaged, PCM recording is impossible even if the VCR is set to the recording mode.
Therefore, be sure that the RECORDING indicator is lit and adjust the recording level with these knobs when recording from a record, an FM broadcast, etc.

⓬ **Headphones level adjustment knob (LEVEL)**
Use to adjust the sound volume for headphone listening. This function is designed to output low-level sound even with this knob turned fully to "0" (minimum).

⓭ **Headphones jack (PHONES)**
Plug in headphones to monitor the sound during recording or playback. Use headphones having an impedance of 8 ohms – 100 ohms.

⓮ **EMPHASIS button**
This button functions only when the REC button is pressed to turn on the RECORDING indicator.
Pressing this button so that the EMPHASIS indicator lights permits high frequency music signals to be recorded with emphasis and played back automatically with equal de-emphasis, thus the S/N ratio can be improved. To disengage this function, press this button again and the EMPAHSIS indicator goes off.
The on/off status of this button is recorded on the tape and automatically applies emphasis accordingly during playback and is shown by the lighting or not lighting of the EMPHASIS indicator.

⑮ **PEAK HOLD ON/OFF button**
When the power is first switched on; this button is disengaged. Press this button so that the PEAK AUTO indicator lights to activate the peak hold function. To release this function, press this button again; the PEAK AUTO/MANUAL indicator goes off.

⑯ **PEAK HOLD AUTO/MANUAL select button**
This button functions only when the PEAK HOLD ON/OFF button is pressed to ON. (When the power is on). Pressing the PEAK HOLD ON/OFF button sets the peak hold mode to AUTO: the PEAK AUTO indicator lights. Pressing this button again sets the peak hold mode to MANUAL. When PEAK HOLD MANUAL is engaged, to reset the peak indication, press the PEAK HOLD ON/OFF button so that the PEAK MANUAL indicator goes off.

⑰ **Microphone jacks (MIC)**
Plug in microphones when recording using microphones. The optimum impedance for the microphone(s) is 600 ohms. When microphones are not being used, disconnect them. When the microphone(s) is equipped with a mini-plug, use the optional conversion adapter (AP-100A).

⑱ **Record muting button (REC MUTE)**
Press to activate the record muting circuit to leave a non-recorded section when recording the sound from microphones or the line input terminals. The MUTE indicator lights. This button has no effect during playback.

Rear panel

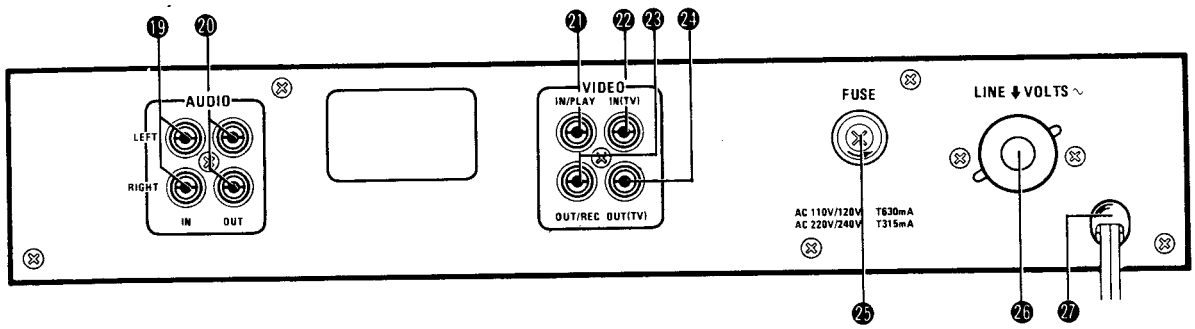


Fig. 2

⑲ **Audio input terminals (AUDIO IN)**
Connect to the REC terminals of an amplifier.

⑳ **Audio output terminals (AUDIO OUT)**
Connect to the play terminals of an amplifier.

㉑ **PCM (video) input terminal (VIDEO IN/PLAY)**
Use when PCM playback is performed.
Connect to the video output terminal of a VCR.

㉒ **Video input terminal (VIDEO IN (TV))**
Use to record the video signal using a VCR.
Connect to the video output terminal of the TV and press the POWER button of this unit to OFF to record the video signal. When power is applied to the VP-100BPS, no signal is available from this terminal.

㉓ **PCM (video) output terminal (VIDEO OUT/REC)**
Use for PCM recording. Connect to the video input terminal of a VCR.
During PCM playback, no signal is output from this terminal.

㉔ **Video/PCM output terminal (VIDEO OUT (TV))**
Use to play back on a TV via a VCR or to record PCM signals on two VCRs at the same time.
When playing back video signals on a TV, connect to the video input terminal of the monitor TV. In this case, pressing the POWER button of this unit to switch off makes the TV automatically connected to the VCR for playback.

㉕ **FUSE holder**

㉖ **VOLTAGE SELECTOR**
(Not provided on units for the U.S.A., Canada, Continental Europe, the United Kingdom and Australia.)

㉗ **Power cord**

Connections

The connection diagrams shown in the following section are explained with reference to the standard connection diagram for PCM recording/playback shown below.
As the provided signal cords are used for the standard connection, obtain the optional signal cords for other application connection.
When PCM recording/playback is performed, make sure to set the VCR to be used to the B/W mode.

—— Standard connection ——

Connection for PCM recording/playback

Notes:

- If the TAPE-1 terminals are not being used for the connection of a tape deck, they can be used instead of the TAPE-2 terminals shown here. Certain amplifiers may have TAPE terminals on their front panel.
- Be sure to use the provided signal cord when connecting a VCR. When extending this cord, use a cord exclusively for video and with a length of less than 10 m to obtain the best performance.
- Certain VCRs may have video input/output terminals on their front panel.
- Make sure to set the input selector of the VCR, if it has one, to the external input (AUX), camera position or the like; otherwise PCM recording is impossible.
- When the VCR has separate video input/output terminals on the front and rear panels, separate the provided signal cord into two.
- When microphones are connected to the microphone jacks, line/mic mixing is possible.

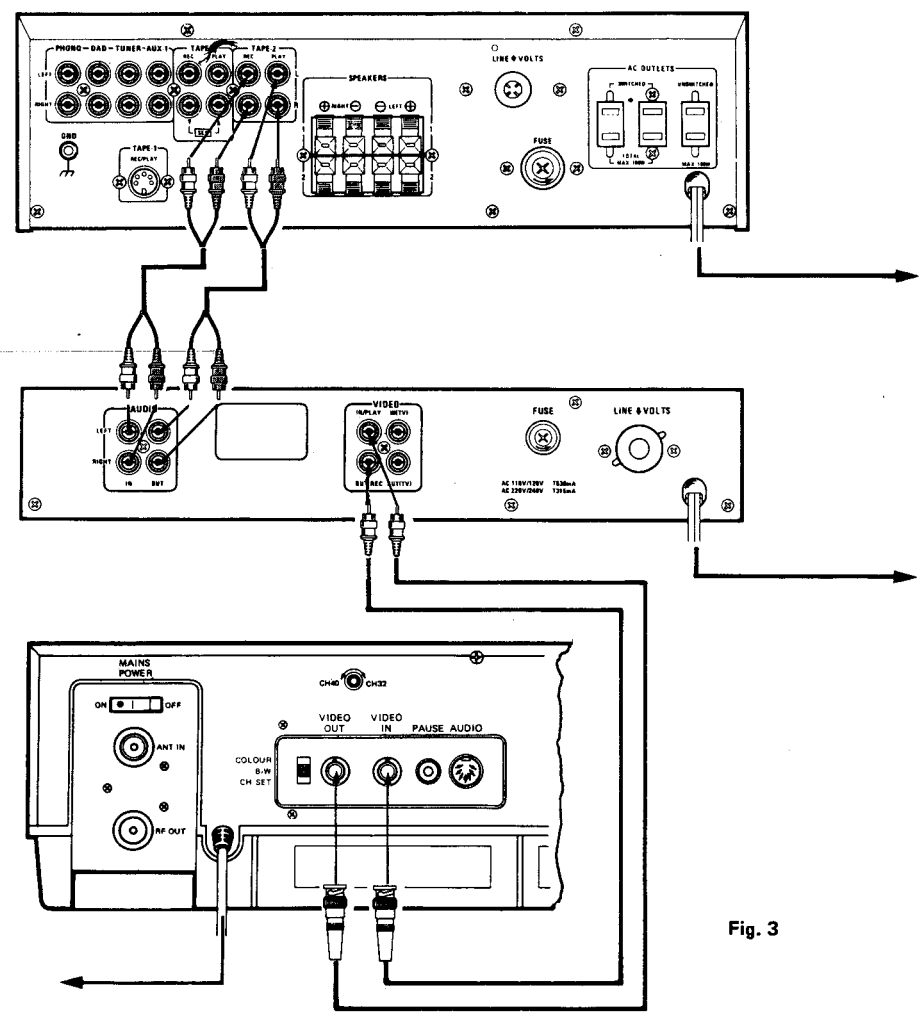


Fig. 3

— Application connection 1 —

Connection when using a VCR for recording PCM audio and video signals

When the following connection is also included with the standard connection, the VCR can be used not only for PCM recording/playback but also for video recording and playback.

Notes:

- When the power of this unit is switched off, the video input and output terminals of the VCR are automatically connected to the TV for video signal playback and recording. When power is applied to this unit, PCM recording and playback are possible.

  If the power of the TV is turned on during PCM recording with this connection, the PCM signal waveform is displayed on the TV screen.
- Be sure to also make the standard connection for this application connection.

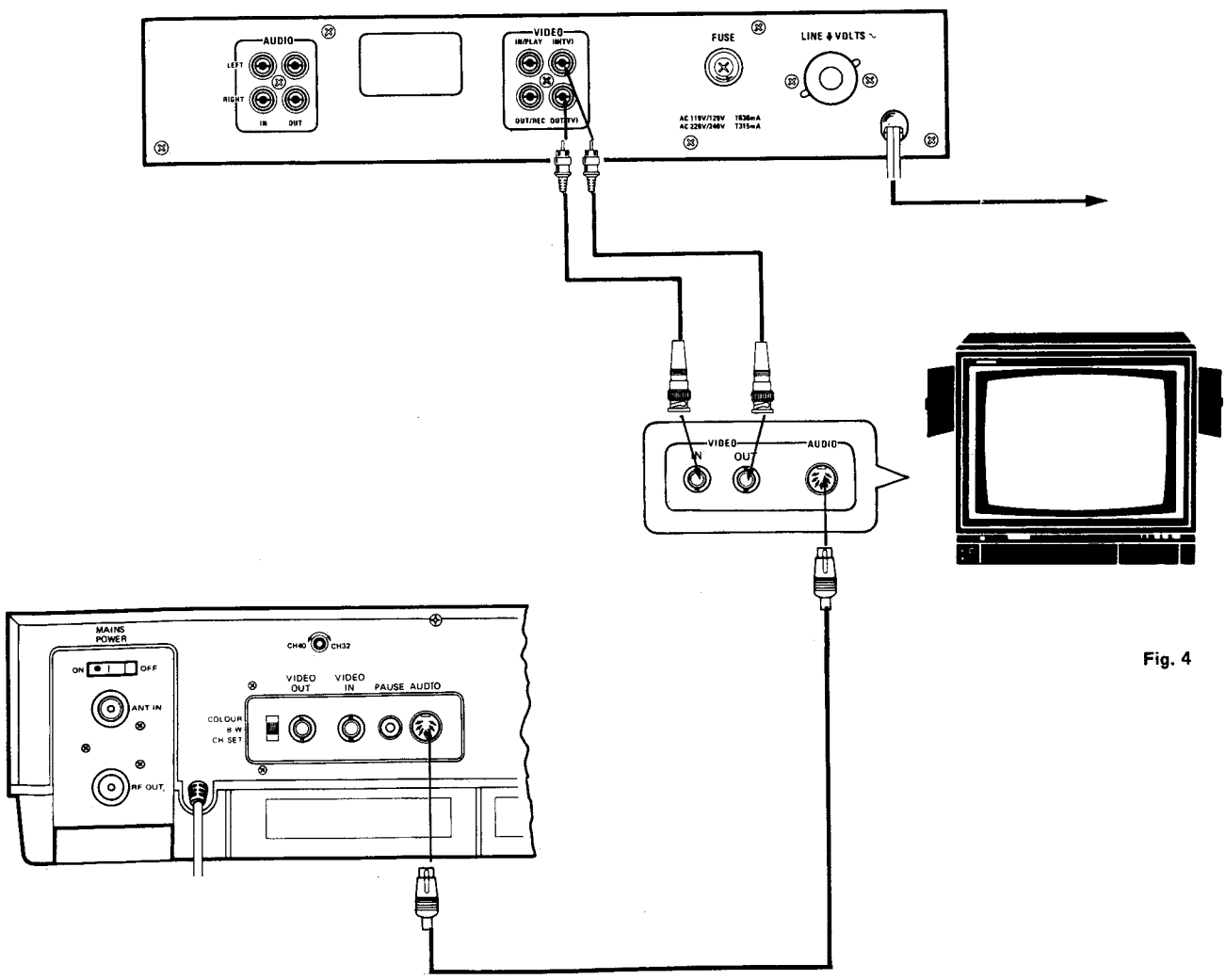


Fig. 4

—— Application connection 2 ——

Connection for dubbing (copying)

Set the TAPE selector of the amplifier to TAPE-1 ► TAPE-2. If the amplifier used has no dubbing mode, connect the AUDIO OUT terminals of the VP-100BPS for playback to the AUX or TUNER terminals of the amplifier.

Refer to "PCM Recording" to operate the VP-100BPS for recording and "PCM Playback" to operate the VP-100BPS for playback.

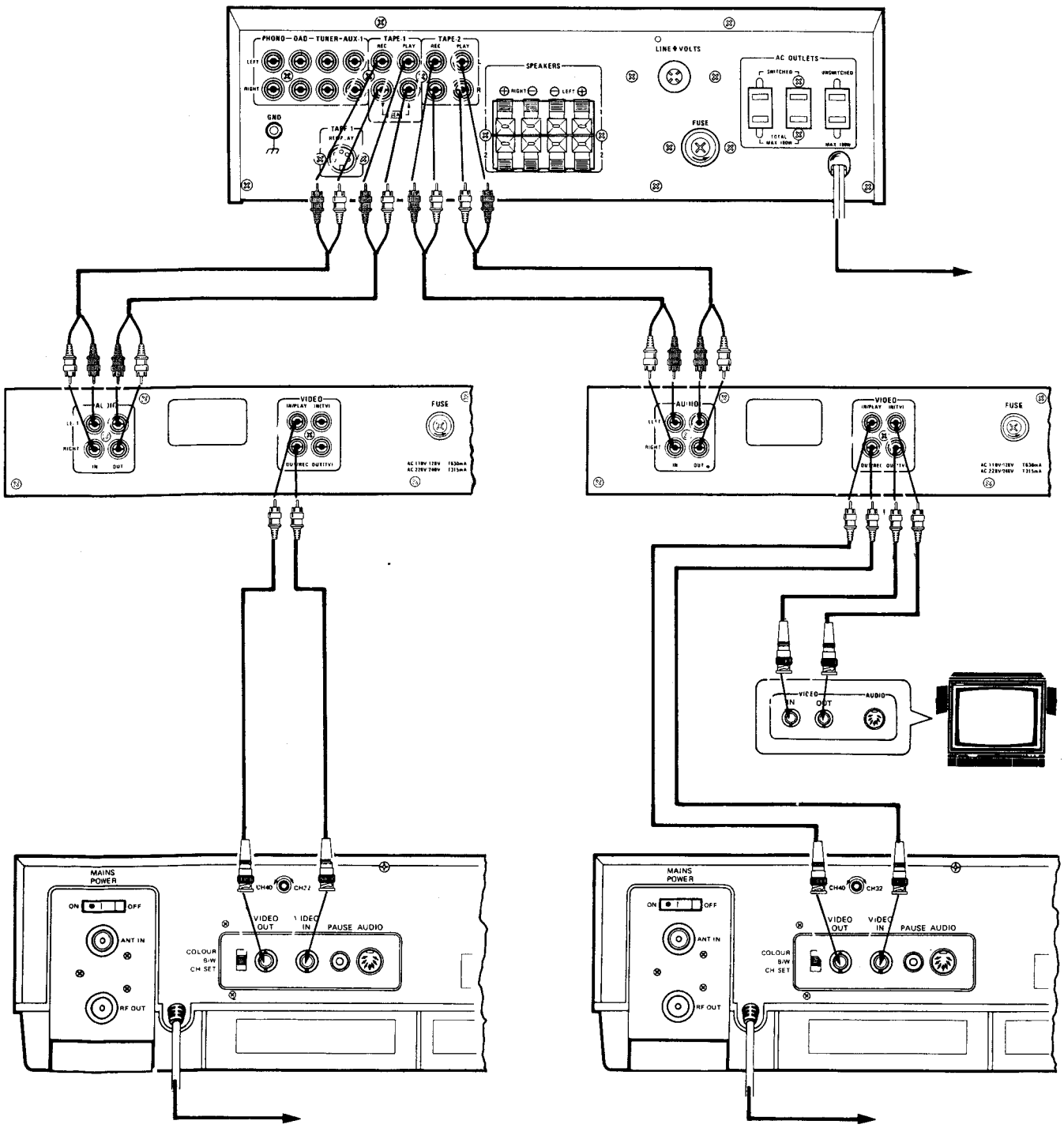


Fig. 5

PCM Recording

- **Procedure**

1. Make sure that the equipment is correctly connected according to the standard connection.
2. Turn power ON of the VP-100BPS and the units connected to it.
   The POWER indicator lights.
3. Press the REC button so that the RECORDING indicator lights.
4. Set the EMPHASIS button as required.
5. Adjust the recording level with the line input adjustment knobs according to the source to be recorded while referring to the recording/playback level indicator.
6. Insert the video tape into the VCR.
7. Press the REC MUTE button so that the MUTE indicator lights.
8. Set the VCR to the recording mode and let the tape run for 3 seconds or more before starting the PCM recording.
9. Press the REC MUTE button so that the MUTE indicator goes off. Now PCM recording is being performed. Monitoring is possible by headphones and via the AUDIO output terminals. To make non-recorded sections, press the REC MUTE button to apply muting; the MUTE indicator lights.
10. When recording is finished, stop the VCR and turn the VP-100BPS's power off.

Tips for better recordings

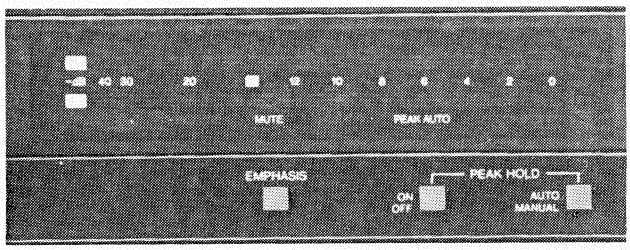


Fig. 6

- The recording quality of PCM signals greatly depends on the tape quality to be used; when tapes already recorded are used for the PCM recording, they may be creased or scratched and the recording quality will be degraded. It is recommended, therefore, to use fresh, unrecorded tapes and to avoid recording on the beginning and ending 30-second sections of the tape (regardless of whether it is new or previously recorded).
- **Recording level adjustment**
  The level indicator of this unit is set to -15 dB with an input level of 142 mV as standard.
  Therefore, its input-level is +15 dB (in case of a normal analog deck, this is +3 dB – +6 dB for 0 VU).
  Thus, the recording level can be set roughly but it is better to set the maximum level of the source to be recorded to about -3 dB using the peak hold function.
  When recording an FM broadcast or the like, the peak level of which is not known, press the EMPHASIS button so that the EMPHASIS indicator lights; even if the OVER indicators light sometimes, the sound may be satisfactory for normal listening, depending on the frequency of their lighting.
- **OVER indicators**
  As the OVER indicator lights when signals of more than 0 dB are input, set the recording level so that the over indicators light as few times as possible.
- **EMPHASIS button**
  As the EMPHASIS function conforms to the EIAJ format CPZ-105, it is compatible with any recorded tape using this technical standard.
  This function improves the S/N ratio with overall characteristic flat by emphasizing the high frequencies during recording and de-emphasizing them during playback. The S/N is improved by 10 dB at 10 kHz.
  When the EMPHASIS button has been set to ON during recording, it is automatically activated during playback by detecting the signal from the tape.

PCM Playback

- **Procedure**

1. Turn POWER on of the VP-100BPS and the units connected to it. The POWER indicator lights.
2. Set the input selector of the connected amplifier to TAPE or TAPE MONITOR.
3. Press the REC button of this unit so that the RECORDING indicator goes off.
4. Press the PLAY button of the VCR after inserting a PCM recorded tape.
   After a few seconds, the MUTE indicator goes off when the unit detects PCM signals from the tape and sound will be heard except the portion of the tape recorded with the REC MUTE function; adjust the volume of the connected amplifier to the required level.

Notes:

- When playing back a tape recorded with a VCR other than the one being used, adjust the tracking for best performance, referring to "Tracking adjustment"
- Some VCRs have a picture sharpness control; when using this type of VCR, adjust in the same way as for tracking adjustment referring to that VCR's instruction book. The tracking adjustment and picture sharpness control are important in PCM playback. Therefore, adjust carefully watching the signal on the TV screen; if not, the sound may be distorted.

5. Turn power OFF of the VP-100BPS after playing the PCM recording.

Tracking adjustment

Check to see that VCR playback picture can be viewed on a vacant channel (one which is not receiving a TV broadcast) of the connected TV monitor.
Turn the tracking adjustment knob of the VCR to the left (or the right) during PCM play and take note of the point where the sound begins to be interrupted, then turn it in the other direction to determine where the sound begins to be interrupted. Set the adjustment knob at the centre between these two points. (If a different VCR is used, reset this knob.)

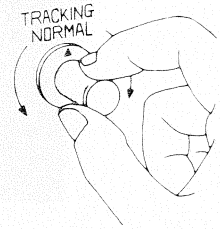


Fig. 7

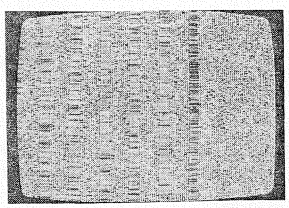


Photo 1 Normal

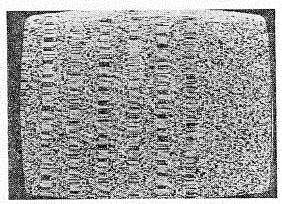


Photo 2 Incorrect tracking

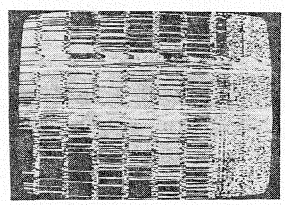


Photo 3 Damaged tape

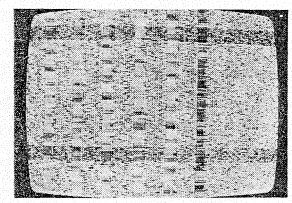


Photo 4 Rolling picture

Note:

- PCM recording/playback is possible only when tracking is adjusted correctly.
  Since the interchangeability of recorded tapes made in the slow (LP) mode is sometimes unsatisfactory with other VCRs, even of the same format, always record in the standard (SP) mode.

If the condition shown in photo 2 or 4 appears, adjust the tracking again. When the condition shown in photo 1 cannot be obtained, even if this adjustment is performed, consult your JVC dealer.

Precautions during Servicing

For security, confirm the following in your servicing operation.

1. Components marked with ⚠ in circuit diagrams are critical parts with regard to safety. Be sure to use the parts with the specified parts numbers.
2. Check that metal clamps are covered with vinyl tubes.
3. Check that the wires have an insulation thickness of more than 0.3 mm (0.012 in.).
4. When replacing AC primary side components, wrap ends of wires securely around the terminals before soldering.
5. When soldering is done between AC line supply voltage terminals, there must be a space of more than 3 mm (0.12 in.) excluding the solder, wire end, curved terminals, etc.

PCM Terminology

As it has not been long since digital audio was introduced to the market, there is a possibility of misunderstanding the special terms and of problems due to this misunderstanding. The definitions in this section are given to avoid such problems.

1. General Terms

(1) PCM encoder:
This is the device to convert audio signals by Pulse Code Modulation and represents the PCM recording system.

(2) PCM decoder:
This device is used to extract data from PCM signals and convert it to audio signals. This represents the PCM reproduction system.

(3) Data sync:
The sync signal which is put at the start of the data block to help reading data.

(4) Slot:
The block that contains quantized binary codes.

(5) Transmission rate:
This is the maximum data frequency and is represented by bps (bits per second).

(6) Error correcting word:
This is a redundant word added for error correction and is usually called parity. This is generated from data, based on the P parity and Q parity correction algorithms.

(7) Error detection word:
This is a redundant word added for error detection and corresponds to the word usually called CRC. In the 16-bit system, the generating function $G(X) = X^{16} + X^{12} + X^5 + 1$ is usually employed: by dividing data of each block by G(X), the remainder is used as the data. This is a kind of cyclic code and, with each G(X), there are two types, forward and reverse.

(8) Word interleave:
Interleaving using a word as the unit. In interleaving, there is, a specified time delay and, by interleaving, burst errors can be treated as random errors.

(9) Emphasis:
Preemphasis is the process for boosting the strength of higher audio frequencies before recording. As the result it necessitates a process for attenuating the high frequencies with the reverse characteristic to preemphasis in playback. The process is called deemphasis and time constants used are usually $T_1 = 50\mu s$ and $T_2 = 15\mu s$. This process only changes the frequency response unlike the Dolby NR system used with cassette decks and, in the PCM system, this is used to improve the S/N at high frequencies.

2. Expert Terms

(1) Deglitch circuit:

When a D/A converter outputs an analog value corresponding to digital data, the output has a glitch as shown in the diagram and analog output immediately after the input is often erroneous. To obtain correct analog values, the analog amplifier input is short-circuited until the D/A output is stabilized so that only the correct analog value is supplied to the amplifier. This operation is performed by the deglitch circuit and it has an influence on the distortion of the analog system output. The deglitch pulse width which determines the analog level is usually set between 1/4 and 1/5 so the analog level becomes as low as 1/4 to 1/5.

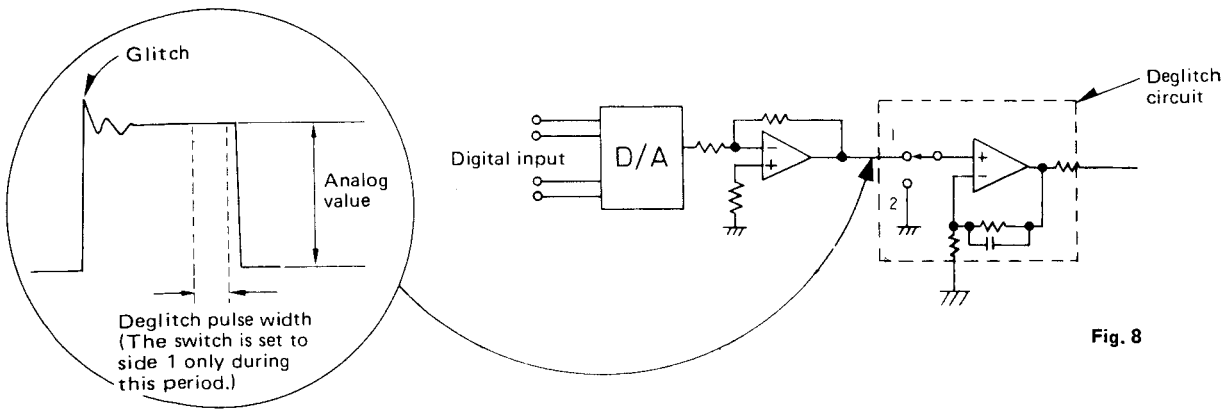
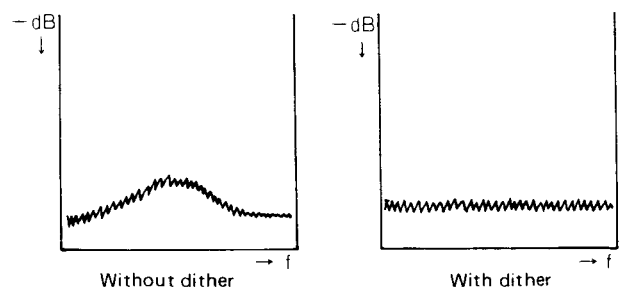


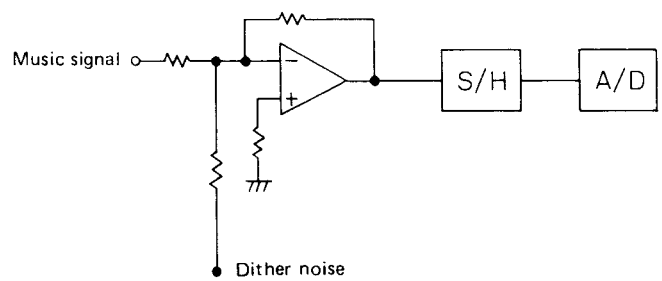
Fig. 8

(2) Dither circuit:

When an analog value is A/D converted after sample-and-hold, the A/D converter bit movement becomes unnatural when the analog level approaches 0. The bit movement of the A/D converter at low level can be made more natural by introducing a small noise oscillation. The quality of sound is judged from the D/A converted analog value, observations of which using a spectrum analyzer are shown on the right.



The dither noise degrades the S/N by 1 dB of 2, but it is useful for making very low level sound more natural which is important for music signals. (The residual noise is dispersed throughout the frequency spectrum to become white noise.)



Circuit principle diagram

Fig. 9

(3) SAR (Successive Approximation Registers):

Special registers to be used when a successive comparison A/D converter is constructed using successive comparison registers. The SARs are necessary because the A/D converter of this unit is discrete. The SARs used in this unit are incorporated in the JVC-original LSI IC MSM61030RS and are used to send to the D/A converter the significance of bits obtained by A/D conversion of the analog value after sample-and-hold.

Technical Descriptions

1. EIAJ Format

It was known that the Pulse Code Modulation would be an excellent modulation method subject to very little influence from the transmission medium. However, it has not been used for audio because it requires a wide transmission band as well as high-speed logical elements. Since 1977, when JVC introduced the VHS video system, the industry began to make serious efforts to develop PCM recorders using the wide video band width.
Since the compatibility of PCM recorders cannot be assured without having a unified format, the EIAJ specified a unified format in Technical File STC-007, 1979.

2. Outline of the Signal Format

With the determination of the EIAJ format, professional PCM recorders used in broadcasting adopted the standard with VCRs, the sampling frequency in Compact Discs is also dependent on the frequency used in VCRs because they use professional PCM recorders for mastering. Digitized data 1 and 0 are arranged in the luminance signal area as shown in Fig. 10. Data sync is put at the start of each data item and 100 % white level is put after each data item to protect the data from the AGC.

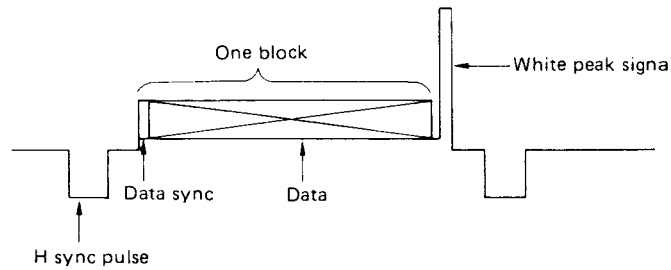


Fig. 10

Fig 11 shows the word arrangement. Each data item is a word with a delay of 16H. (D = 16 blocks)

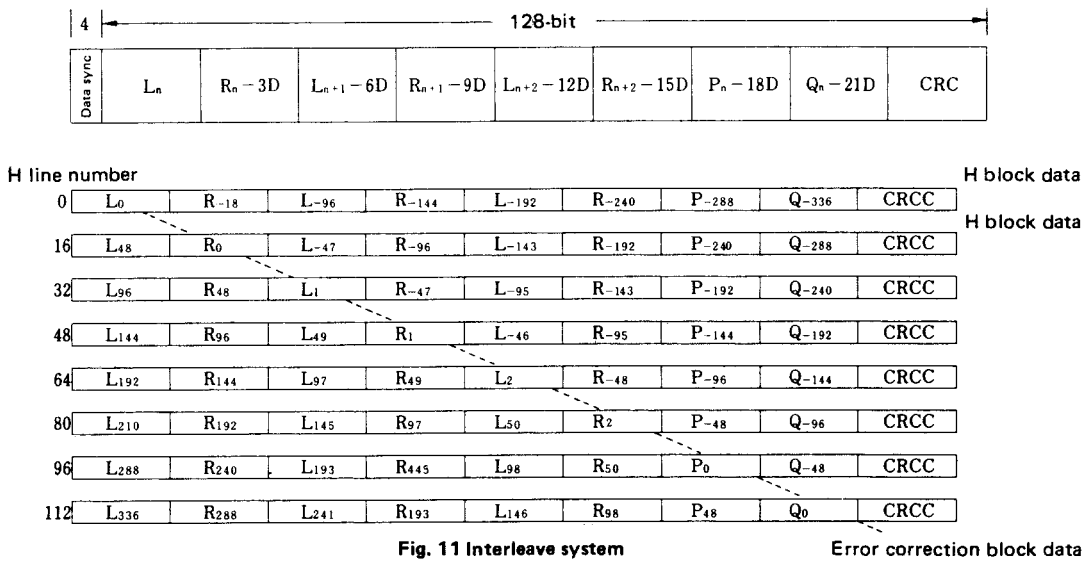

4
128-bit
Data sync
Ln
Rn − 3D
Ln+1 − 6D
Rn+1 − 9D
Ln+2 − 12D
Rn+2 − 15D
Pn − 18D
Qn − 21D
CRC
H line number
H block data
H block data
0 L0 R−18 L−96 R−144 L−192 R−240 P−288 Q−336 CRCC
16 L48 R0 L−47 R−96 L−143 R−192 P−240 Q−288 CRCC
32 L96 R48 L1 R−47 L−95 R−143 P−192 Q−240 CRCC
48 L144 R96 L49 R1 L−46 R−95 P−144 Q−192 CRCC
64 L192 R144 L97 R49 L2 R−48 P−96 Q−144 CRCC
80 L210 R192 L145 R97 L50 R2 P−48 Q−96 CRCC
96 L288 R240 L193 R445 L98 R50 P0 Q−48 CRCC
112 L336 R288 L241 R193 L146 R98 P48 Q0 CRCC
Error correction block data

Fig. 11 Interleave system

(One block consists of the data sync 1010, then 6 words in which L and R alternate, then two parity words for error correction, and the 16-bit CRC for error detection.)

Reference

$$\begin{cases} P_n = \sum_{i=1}^{6} 0 W_i \\ Q_n = \sum_{i=1}^{6} 0 T^{7-i} W_i \\ \text{CRC ; } G(X) = X^{16} + X^{12} + X^5 + 1 \end{cases} \quad (\Sigma 0 \text{ is EX-OR})$$

Consequently, the VP-100BPS signal is as shown in Photo 1 when observed on a video monitor.

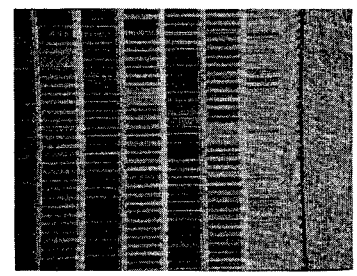


Photo. 1 Monitoring the PCM processor signal

Fig. 12 below shows the relationship between PAL/SECAM-TV frequencies and PCM processor frequencies.

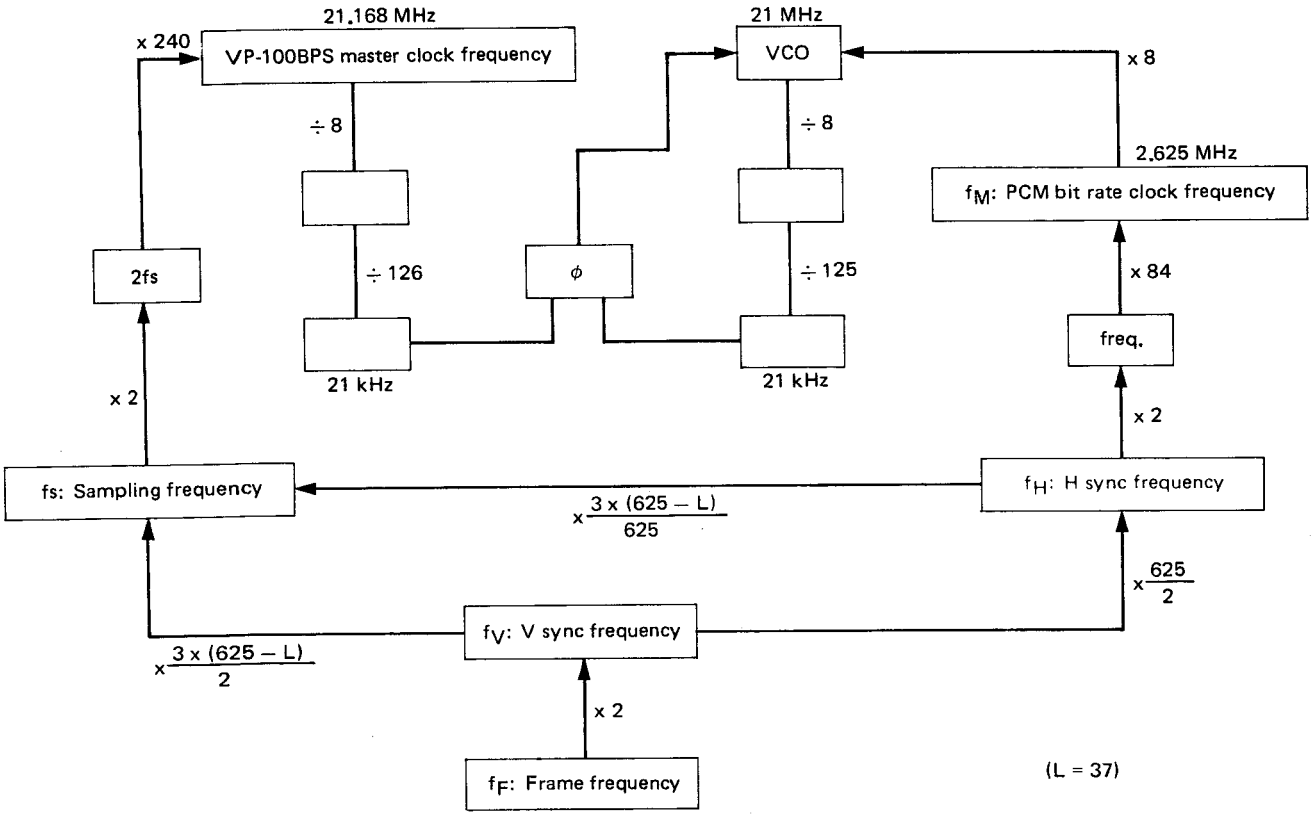
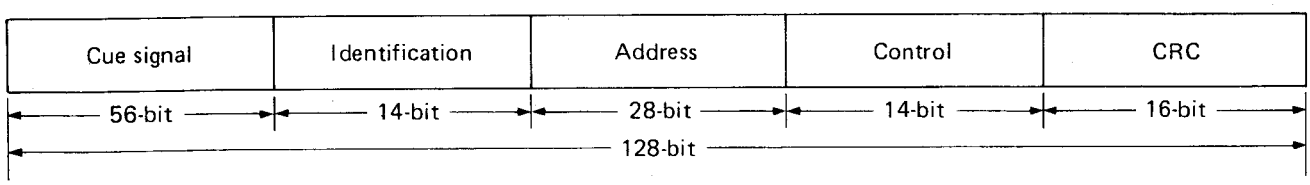


Fig. 12 Relationship between PCM frequencies and PAL/SECAM-TV signal

Therefore, the sampling frequency, fs ≒ 44.1 kHz, is within the reference value, which is $44.1^{+0.01}_{-0.11}$ kHz.
In the first horizontal scanning area after every V sync signal, there is a block carrying the control signal. Its contents are specified as shown in Fig. 13 and include various flags, timecodes, etc. With the VP-100BPS, only the emphasis flag data is input by on & off operations on the front panel. The playback mode is automatically switched by detecting flags in the control block.



- **Contents of the control word**

Bit No.	Code	Control function	Bit details
1 ~ 10	Not specified	—	0
11	Dubbing inhibit code	None	0
12	P correction ID code	Yes	0
13	Q correction ID code	Yes	0
14	Emphasis ID code	Yes	0

Fig. 13 Contents of the control block

Identification of emphasis from the flag is possible in the digital system. Fig. 14 shows the time constant and frequency characteristic of the emphasis time constant. (It is same as in the CD system.)

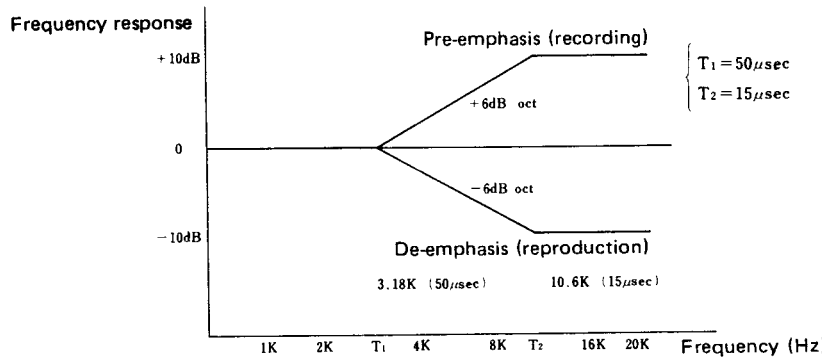


Fig. 14 Emphasis characteristics

3. Video Signal Waveform

In the VP-100BPS, the data signal is superimposed on the video signal after time base conversion. Fig. 15 shows the signal levels and the waveforms near the V sync pulse.

The tolerances of the voltages are ±10 %. (This is with 75 Ω termination.)

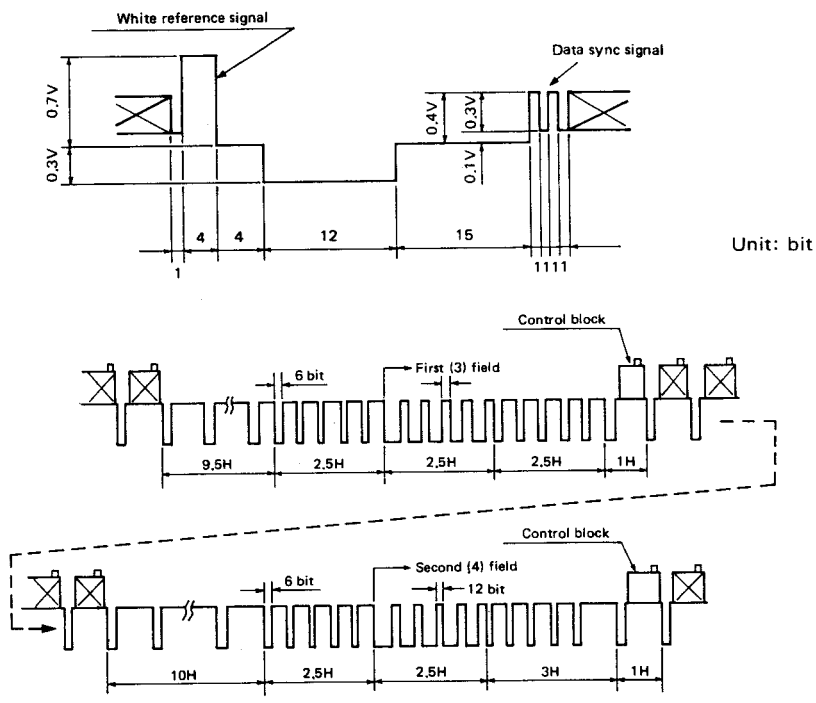


Fig. 15 Signal levels and waveforms near V sync

4. Input and Output Levels

(1) Audio input/output levels

Reference frequency : 450 Hz (9 times the V sync frequency)

Reference recording level: With sine wave input, the positive peak value is 00010110110001 (05B1), and the negative peak value is 11101001001111 (3A4F).

Normal input level : 142 mV sensitivity, with the REC control at its center (5) position.

Output level : 342 mV fixed

(2) Video input/output level : 1 Vp-p (75 Ω termination)

Adjustments

Adjustment Items and Points

Note: "Effects" describes the phenomena which occur when the corresponding control is turned clockwise.

Adjustment items	Adjustment points	Effects	Check jig
1. Supply voltage adjustment +5 V adjustment -15 V adjustment	 R451 R450	 Voltage increases in + side. Voltage increases in - side.	
2. VU level adjustment L channel R channel	 R459 R460	 VU (OVER) lights less often. VU (OVER) lights less often.	
3. Recording/reproduce audio signal level adjustment L channel R channel	 R583 R683	 Level decreases. Level decreases.	
4. DC offset adjustment L channel R channel	 R549 R649		
5. Comparator DC offset adjustment	R954	**(Note)** Generally, do not touch this.	
6. Reproduce signal delay adjustment	R122	Delay time increases.	PCB No. W3144-003 See page 1-24.
7. (PAL) Reproduce 21.168 MHz adjustment (SECAM) Reproduce 21.000 MHz adjustment	L101 L701	Frequency increases.	
8. Reproduce band pass filter	T101	Center frequency decreases.	

Remarks

1. Also see the "Block Diagram" and "Wiring Diagram".
2. Use the check jig specified by JVC Stereo Division.
   For checking characteristics in the playback mode, a pre-recorded reference tape (No. ETT-2) is also available.

Standard Connection

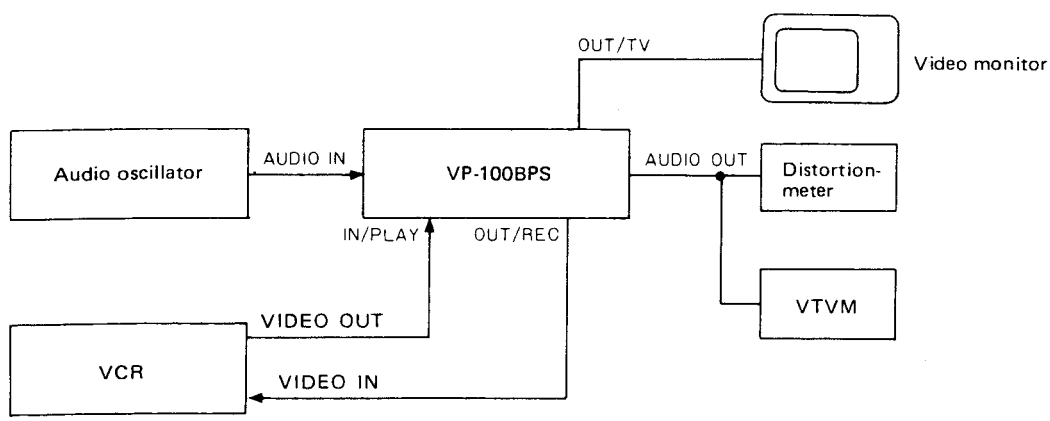


Fig. 16

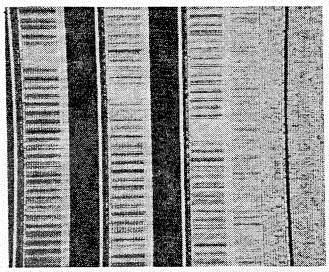
Adjustment Procedure

1. Recording System Check and Adjustment

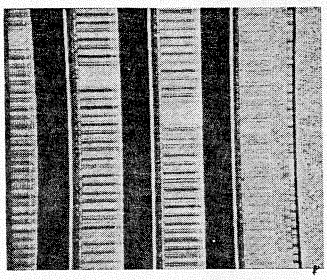
(1) Press the REC/PB switch in (▬) to enter the record mode.

(2) Short-circuit the Audio GND, connect a video monitor to the OUT (TV) terminal, and adjust R549 (L ch), R649 (R ch) and R954 (both ch) so that the picture on the monitor is as shown on the right.

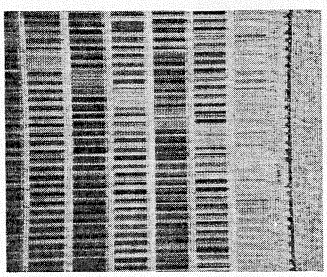
Note: Since the VP-100BPS is extremely sensitive to changes in the value of R954, pay special attention in the adjustment.



Incorrect L ch offset adjustment
(L ch portions are black.)



Incorrect R ch offset adjustment
(R ch portions are black.)



Correct offset adjustment
(Both channels are gray.)

Fig. 17

(3) Input a sine wave (450 Hz and -6 dBs, 500 mV rms) to the Audio IN, set the LINE input volume control to the MAX position and check that "OVER" lights in the FL indicator.

(4) Then gradually decrease the LINE input control to the point where "OVER" disappears, and adjust R583 (L) and R683 (R) so that the output from Audio OUT is 2 ±0.05 V rms.

(5) Input 20 Hz, 1 kHz, 10 kHz and 15 kHz signals at -17 dBs (approx. 142 V rms) to the Audio IN and confirm that the level differences of the outputs from Audio OUT are as follows with both EMP ON and OFF.

20 Hz	1 kHz	10 kHz	15 kHz
$^{0}_{-1}$ dB	0 dB	±0.5 dB	±0.5 dB

(6) Check that a 1 Vp-p video signal is output from the OUT/REC terminal when the OUT (TV) terminal is terminated with 75 Ω.

2. Playback System Adjustment

(1) Set the REC/PB switch to its out (▟) position to enter the playback mode.

(2) Connect a frequency counter to TP4 and adjust L101 so that the frequency indicated is 21.168 MHz ±1 kHz.

Note: Use a nonmetallic alignment tool.

(3) Connect a frequency counter to TP-51, TP-52 on ENB-009 and adjust L701 so that the frequency indicated is 21.000 MHz ±1 kHz.

(4) Perform the delay amount adjustment (R122).

1) Attach the exclusive check jig PCB (W3144-003) to the check point and play a recorded tape on the VCR.

2) Adjust R122 so that none of the three LEDs on the check jig lights. The LEDs indicate the amount of error and they go off when there is no error.

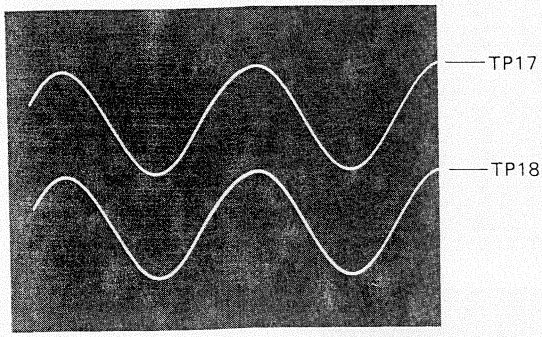
3) Play a tape which has been recorded and fine adjust R122 so that there are no errors.

Reference: When a 1 kHz sine wave is applied at -7 dBs (approx. 450 mV rms) to Audio IN and it is recorded/reproduced with the Line input control at the MAX position, the standard distortion is about 0.01 %.

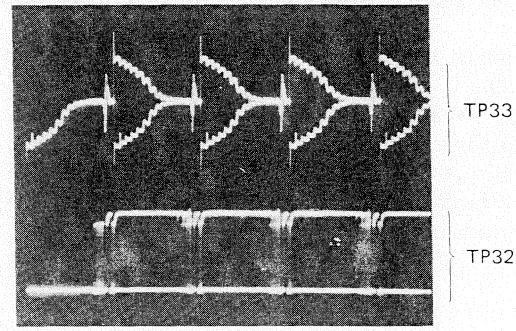
Reference Signal Waveform

Record Mode

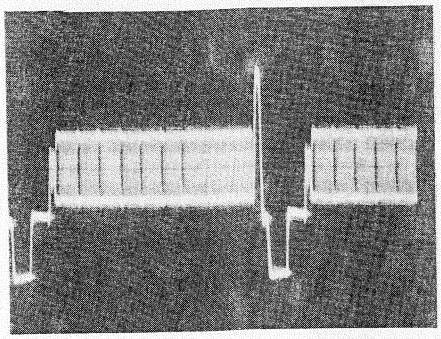
① Audio input signal in record mode



② Audio input signal in record mode

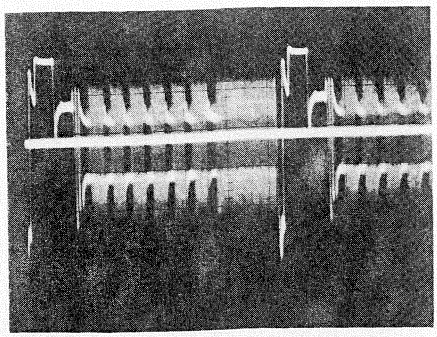


③ OUT/REC output in record mode, or IN/PLAY input in playback mode (20 μs/div.)

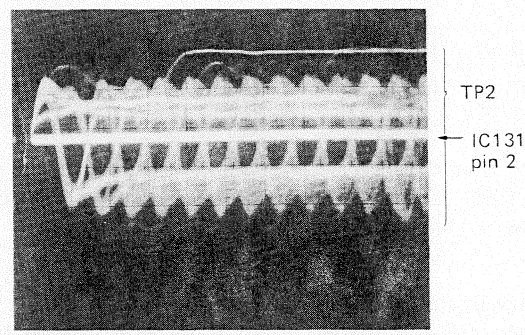


Playback Mode

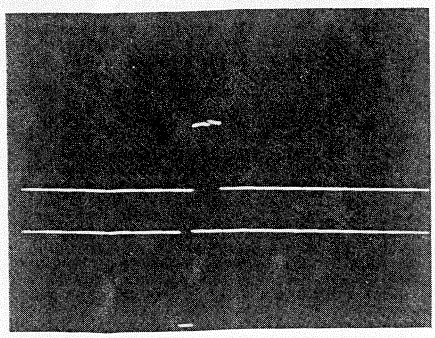
④



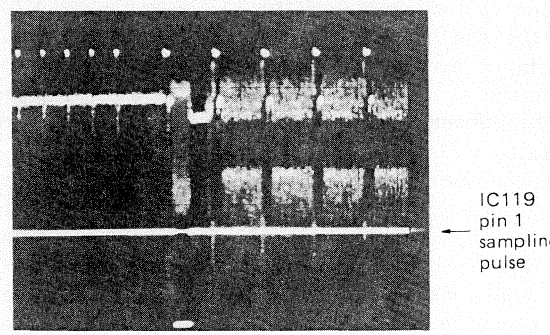
⑤ Magnification of ④



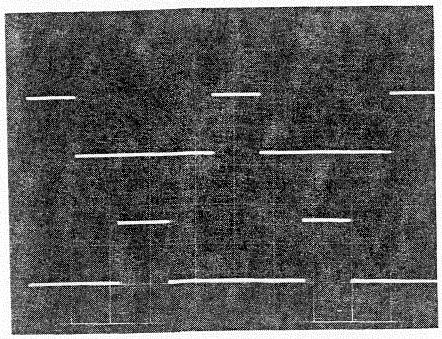
⑥ Master CLK reproduce PLL comparator input



⑦ TP2 comparator input (V rate)



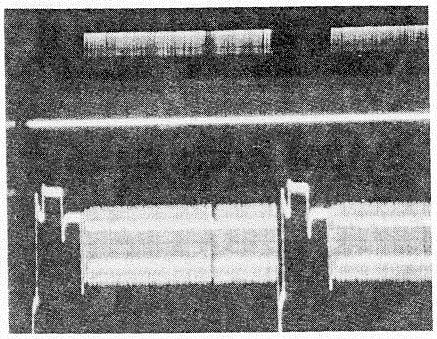
⑧ Deglitcher driver input



IC125 pin 3

IC125 pin 6 (44.1 kHz)

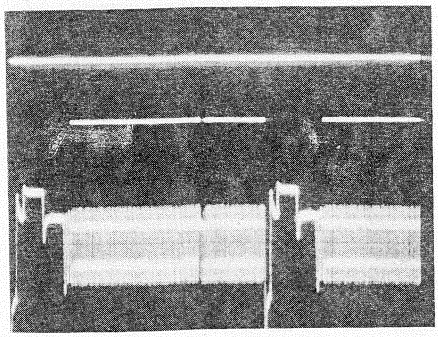
⑨



IC104 pin 8

TP2 reproduce input at full peak condition (20 μs/div.)

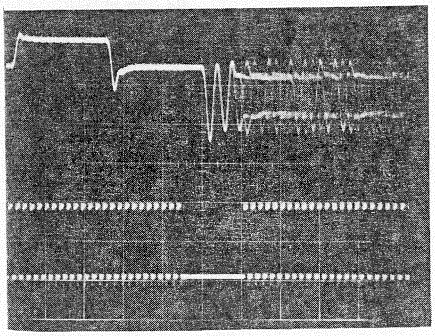
⑩



IC109 pin 3

TP2

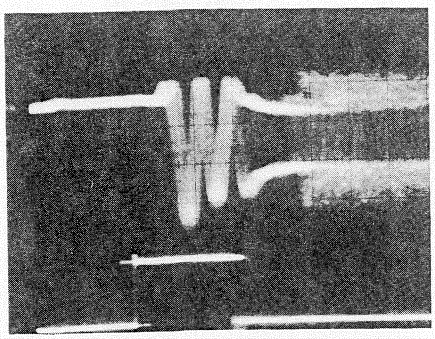
⑪



TP2

SUB CLK (IC119 pin 18, 2.64 MHz)

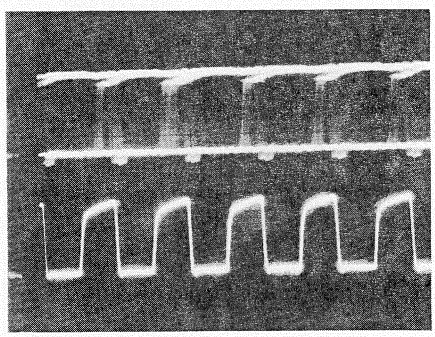
⑫



TP2

SUB CLK RESET (IC119 pin 17)

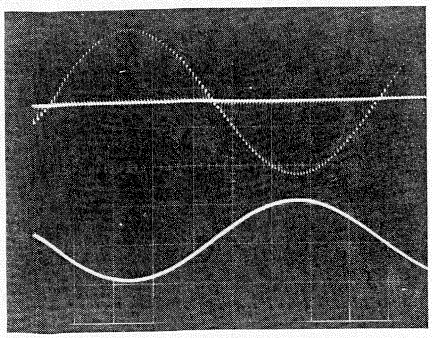
⑬



IC131 pin 7 (DATA output)

SUB CLK (IC119 pin 18, 2.64 MHz)

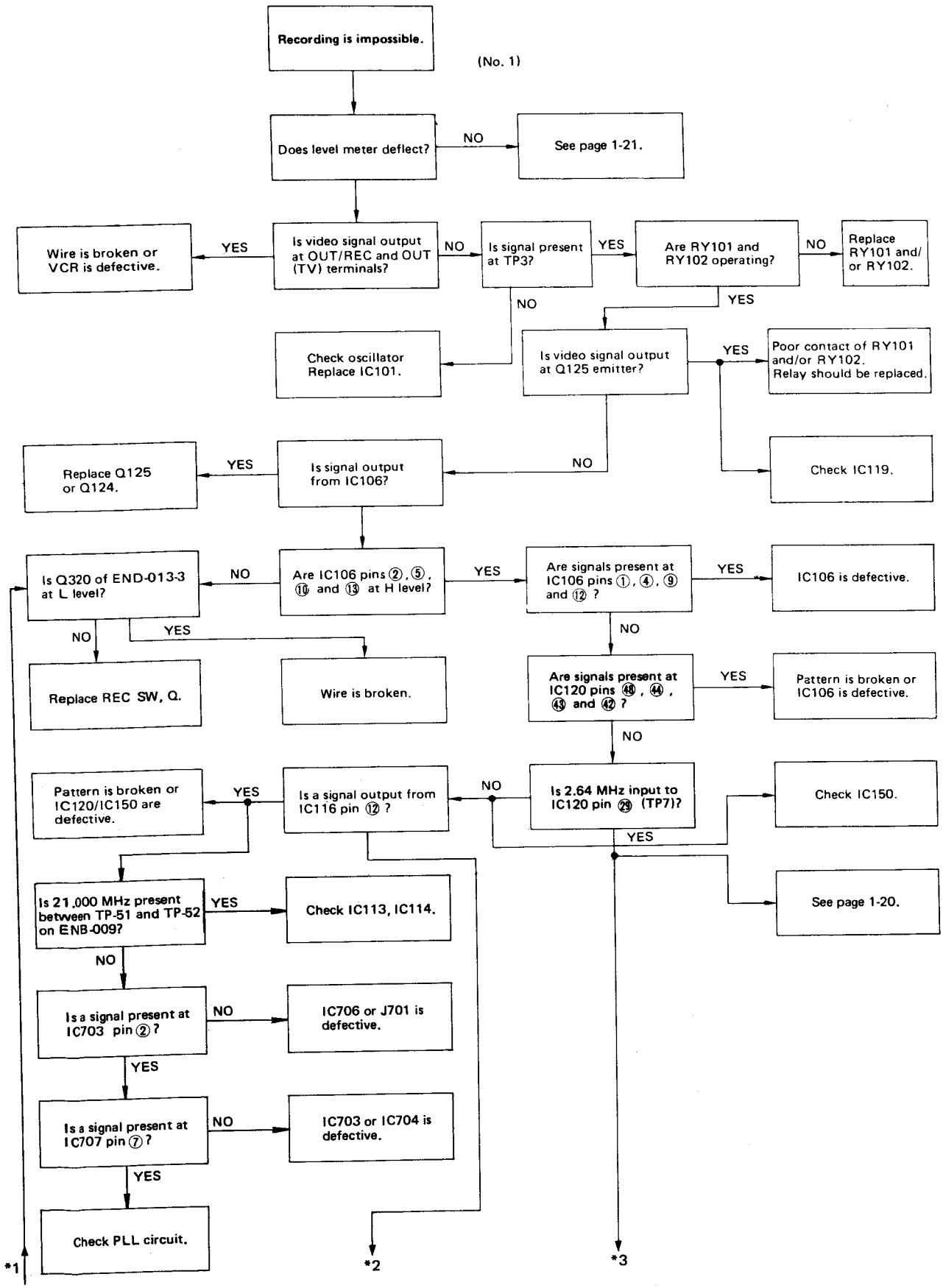
⑭



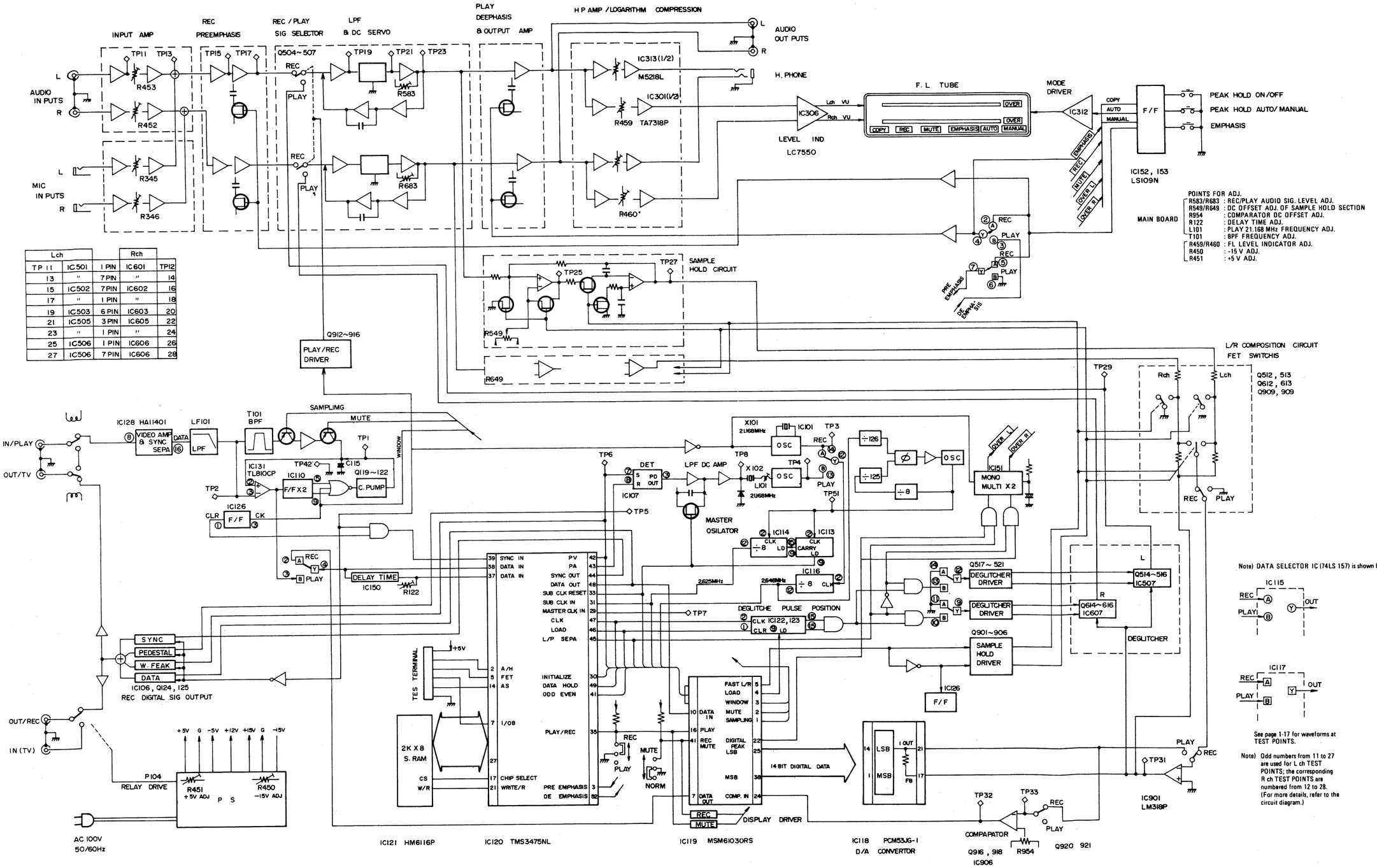
TP31 (The signal converted into voltage after D/A conversion)

TP23 (The above signal after passing the 1 kHz, LPF)

Servicing Flowchart

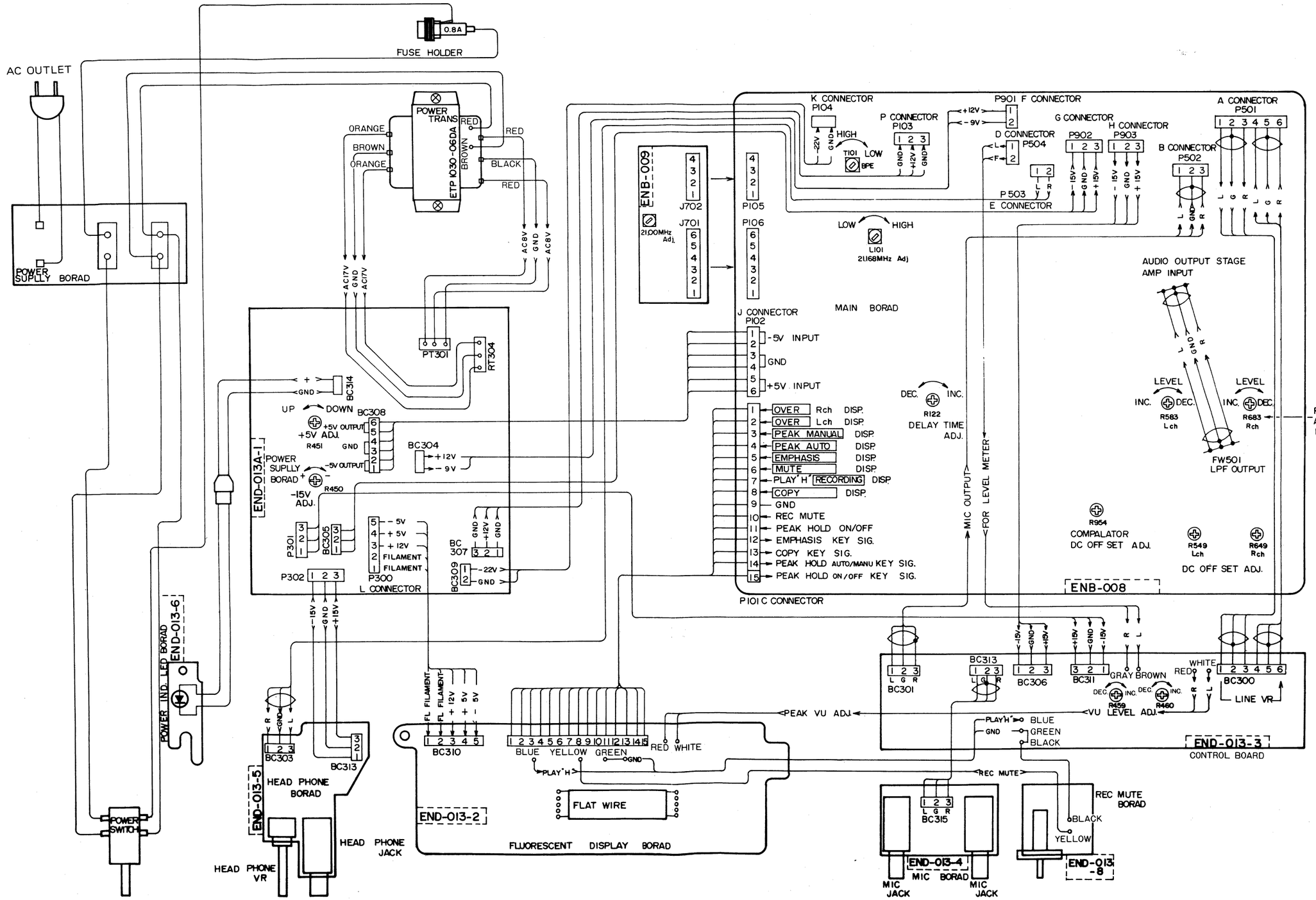


Block Diagram

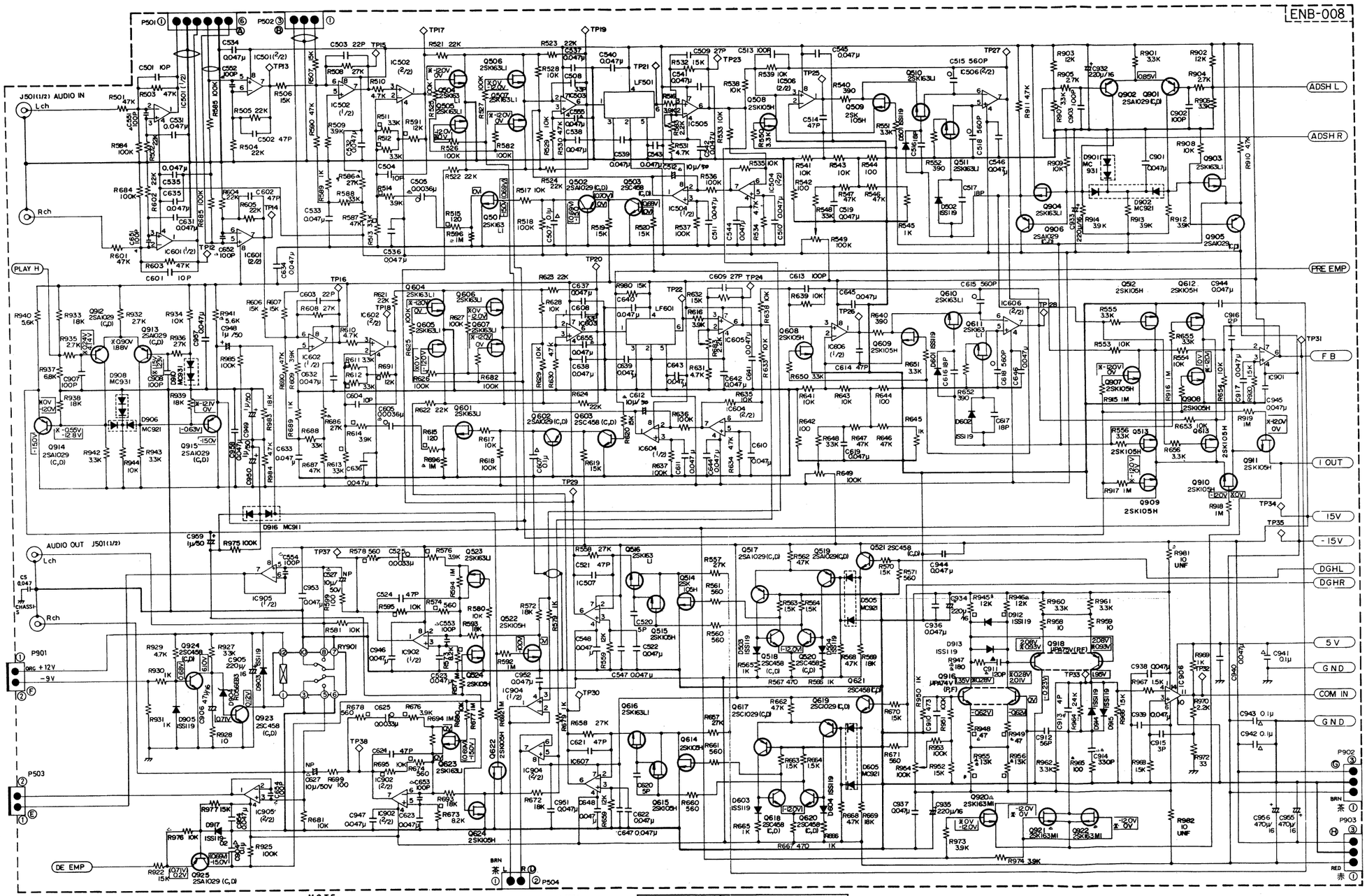


Lch			Rch	
TP 11	IC501	1 PIN	IC601	TP12
13	"	7 PIN	"	14
15	IC502	7 PIN	IC602	16
17	"	1 PIN	"	18
19	IC503	6 PIN	IC603	20
21	IC505	3 PIN	IC605	22
23	"	1 PIN	"	24
25	IC506	1 PIN	IC606	26
27	IC506	7 PIN	IC606	28

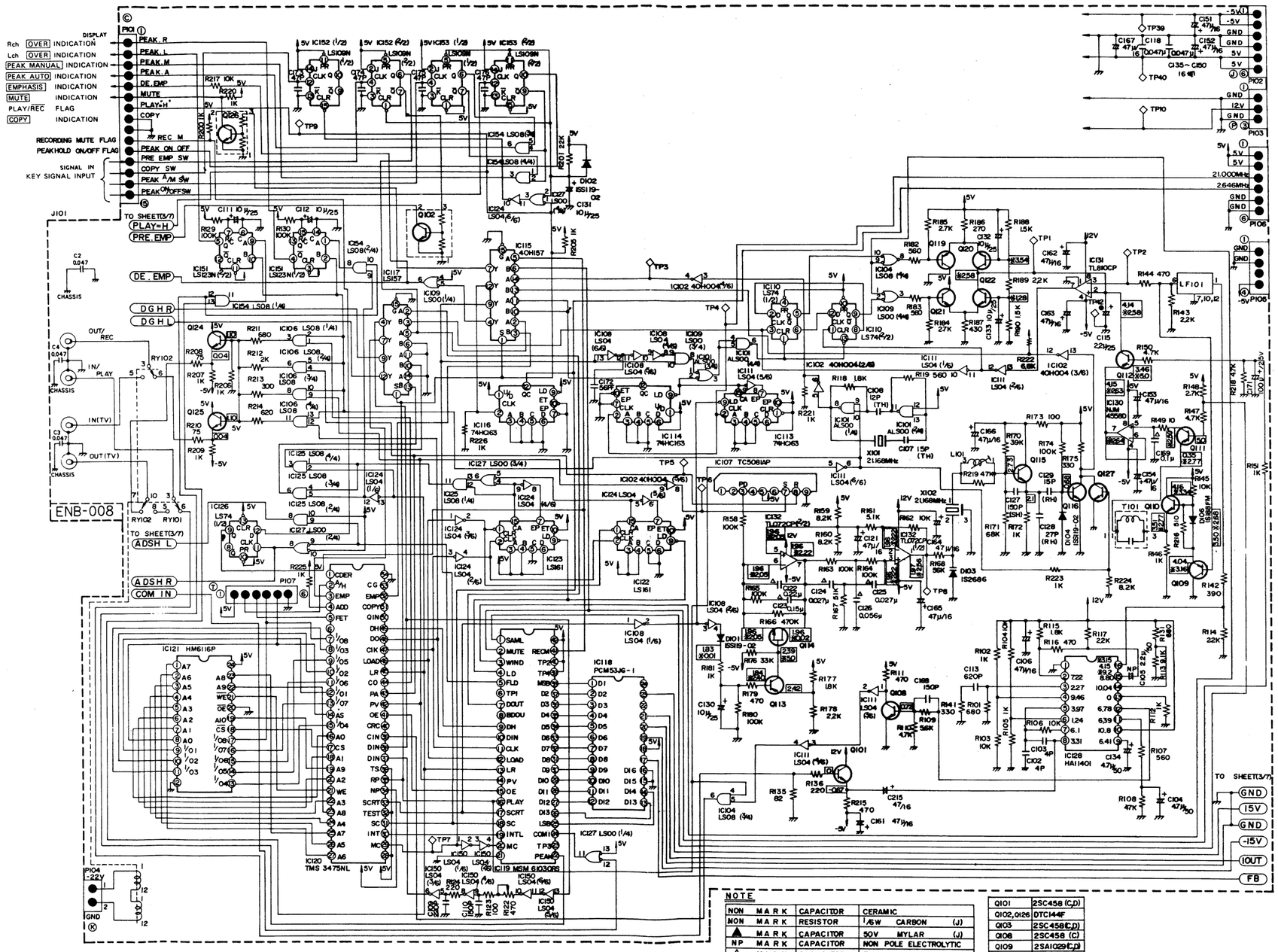
Wiring Diagram



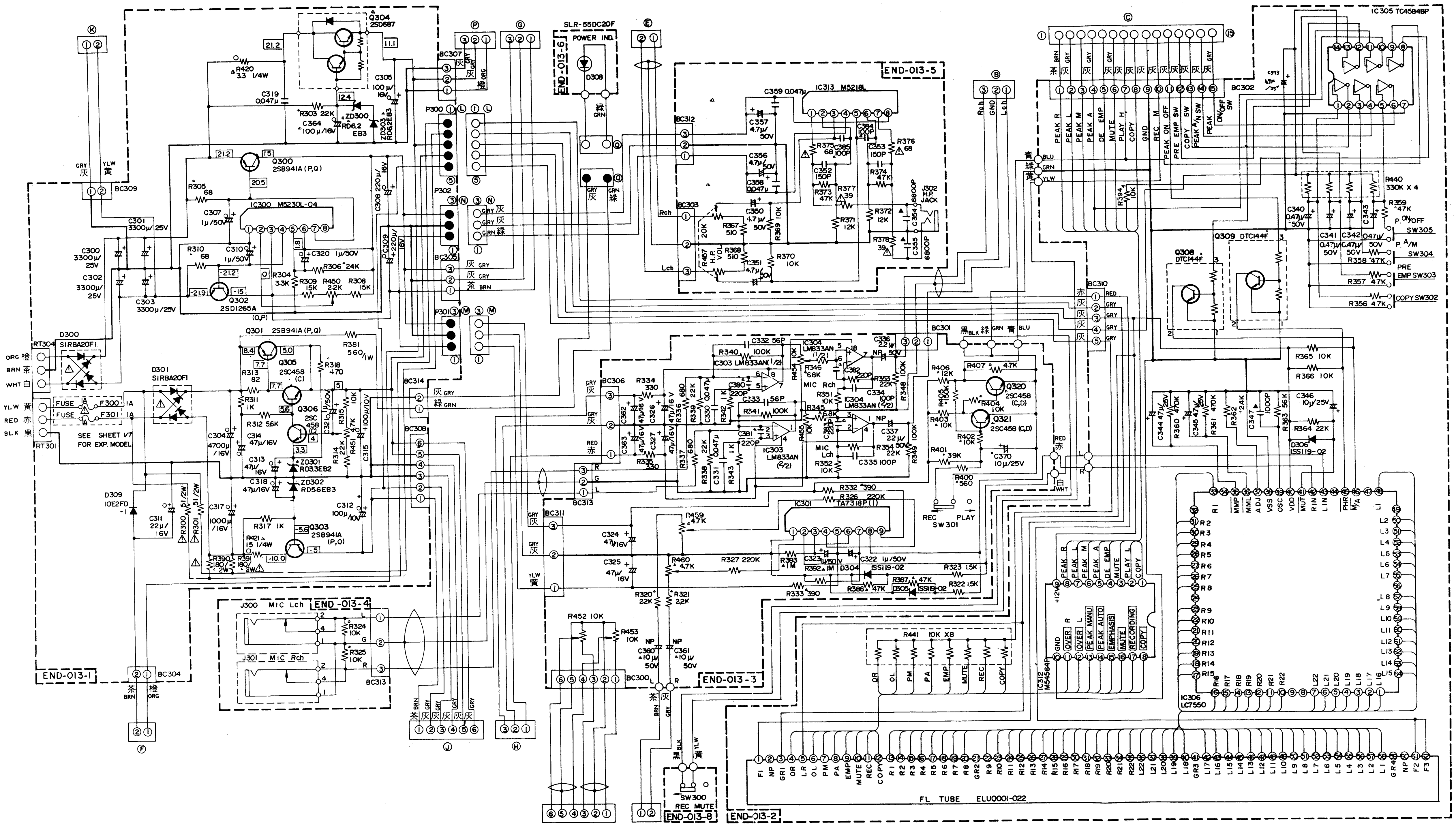
Analog Section (1/4)

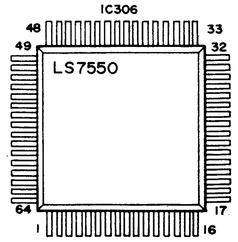


PAL/SECAM Logic Section (2/4)


Rch OVER INDICATION
Lch OVER INDICATION
PEAK MANUAL INDICATION
PEAK AUTO INDICATION
EMPHASIS INDICATION
MUTE INDICATION
PLAY/REC FLAG
COPY INDICATION
RECORDING MUTE FLAG
PEAK HOLD ON/OFF FLAG
SIGNAL IN
KEY SIGNAL INPUT
PEAK.R
PEAK.L
PEAK.M
PEAK.A
DE.EMP
MUTE
PLAY-H
COPY
REC M
PEAK ON OFF
PRE EMP SW
COPY SW
PEAK A/M SW
PEAK ON/OFF SW
JI01
TO SHEET(3/7)
PLAY=H
PRE.EMP
DE.EMP
DGHR
DGHL
ADSHL
ADSHR
COM IN
ENB-008
OUT/REC
IN/PLAY
IN(TV)
OUT(TV)
CHASSIS
RY102
RY101
IC121 HM6116P
IC120 TMS 3475NL
IC119 MSM 6103GRS
IC118 PCM53JG-1
IC127 LS00 (1/4)
IC107 TC5081AP
IC102 4OH004 (3/6)
IC111 LS04 (6/6)
IC114 74HC163
IC113 74HC163
IC116 74HC163
IC123 LS161
IC122 LS161
IC115 4OH157
IC117 LS157
IC109 LS00 (1/4)
IC110 LS74 (1/2)
IC131 TL810CP
IC132 TL072CP (1/2)
IC128 HA11401
IC130 NJM 4558D
IC101 ALS00 (1/4)
IC104 LS08 (1/4)
IC105 LS08 (2/4)
IC106 LS08 (3/4)
IC125 LS08 (4/4)
IC126 LS74 (1/2)
IC127 LS00 (2/4)
IC124 LS04 (1/6)
IC125 LS08 (1/4)
IC150 LS04 (6/6)
IC154 LS08 (1/4)
IC154 LS08 (2/4)
IC154 LS08 (3/4)
IC154 LS08 (4/4)
IC124 LS04 (5/6)
IC108 LS04 (6/6)
IC108 LS04 (5/6)
IC108 LS04 (4/6)
IC108 LS04 (3/6)
IC108 LS04 (2/6)
IC108 LS04 (1/6)
IC111 LS04 (5/6)
IC111 LS04 (4/6)
IC111 LS04 (3/6)
IC111 LS04 (2/6)
IC111 LS04 (1/6)
IC104 LS08 (3/4)
IC150 LS04 (5/6)
IC150 LS04 (4/6)
IC150 LS04 (3/6)
IC150 LS04 (2/6)
IC150 LS04 (1/6)
IC154 LS08 (1/2)
IC127 LS00 (3/4)
IC124 LS04 (4/6)
IC124 LS04 (3/6)
IC124 LS04 (2/6)
IC124 LS04 (1/6)
IC125 LS08 (4/4)
IC125 LS08 (3/4)
IC125 LS08 (2/4)
IC125 LS08 (1/4)
IC108 LS04 (2/6)
IC108 LS04 (1/6)
IC102 4OH004 (4/6)
IC102 4OH004 (2/6)
IC102 4OH004 (1/6)
IC111 LS04 (6/6)
IC111 LS04 (5/6)
IC111 LS04 (4/6)
IC111 LS04 (3/6)
IC111 LS04 (2/6)
IC111 LS04 (1/6)
IC101 ALS00 (4/6)
IC101 ALS00 (3/6)
IC101 ALS00 (2/6)
IC101 ALS00 (1/6)
IC154 LS08 (4/4)
IC154 LS08 (3/4)
IC154 LS08 (2/4)
IC154 LS08 (1/4)
IC124 LS04 (6/6)
IC124 LS04 (5/6)
IC124 LS04 (4/6)
IC124 LS04 (3/6)
IC124 LS04 (2/6)
IC124 LS04 (1/6)
IC127 LS00 (4/4)
IC127 LS00 (3/4)
IC127 LS00 (2/4)
IC127 LS00 (1/4)
IC108 LS04 (6/6)
IC108 LS04 (5/6)
IC108 LS04 (4/6)
IC108 LS04 (3/6)
IC108 LS04 (2/6)
IC108 LS04 (1/6)
IC102 4OH004 (5/6)
IC102 4OH004 (4/6)
IC102 4OH004 (3

Phones/Mic/Log. Comp. Amplifier Section (3/4)

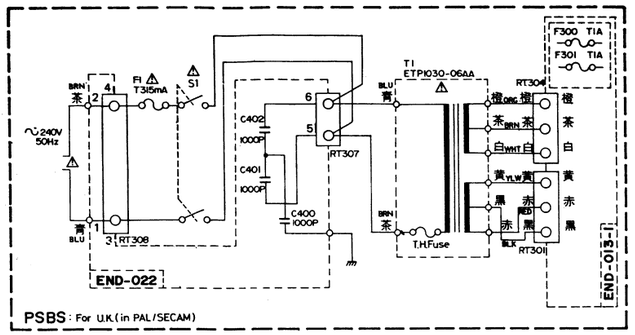

END-013-1
END-013-2
END-013-3
END-013-4
END-013-5
END-013-6
END-013-8
IC300 M5230L-04
IC301 TA7318P(1)
IC303 LM833AN
IC304 LM833AN
IC305 TC4584BP
IC306 LC7550
IC312 M54564P
IC313 M5218L
Q300 2SB941A (P,Q)
Q301 2SB941A (P,Q)
Q302 2SD1265A
Q303 2SB941A (P,Q)
Q304 2SD687
Q305 2SC458 (C)
Q306 2SC458 (C)
Q308 DTC144F
Q309 DTC144F
Q320 2SC458 (C,D)
Q321 2SC458 (C,D)
D300 SIRBA20F1
D301 SIRBA20F1
D308
D309 10E2FD-1
SLR-55DC20F POWER IND.
J300 MIC Lch
J301 MIC Rch
J302 H.P. JACK
SW300 REC MUTE
SW301 REC PLAY
SW302 COPY
SW303 PRE EMP
SW304 P. A/M
SW305 P. ON/OFF
FUSE F300 1A
FUSE F301 1A
SEE SHEET 1/7 FOR EXP. MODEL
FL TUBE ELU0001-022
MIC Rch
MIC Lch
R441 10K X8
R440 330K X 4



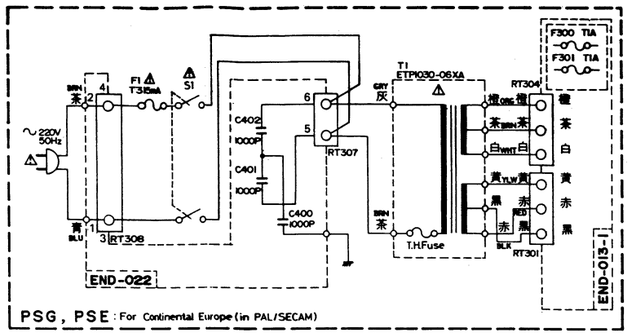
NOTE

NON	MARK	RESISTOR	1/6W CARBON (J)
NON	MARK	CAPACITOR	CERAMIC
▲	MARK	CAPACITOR	50V MYLAR (J)
NP	MARK	CAPACITOR	NON POLAR ELECTROLYTIC
—ǁ—	MARK	CAPACITOR	E CAPACITOR (QET)
—ǁ—°	MARK	CAPACITOR	E CAPACITOR (QEH)
—W—	MARK	RESISTOR	UNF CARBON (J)

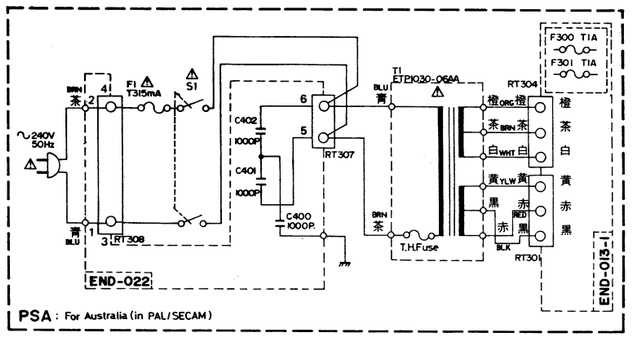
Power Supply & Sub Logic Section (4/4)



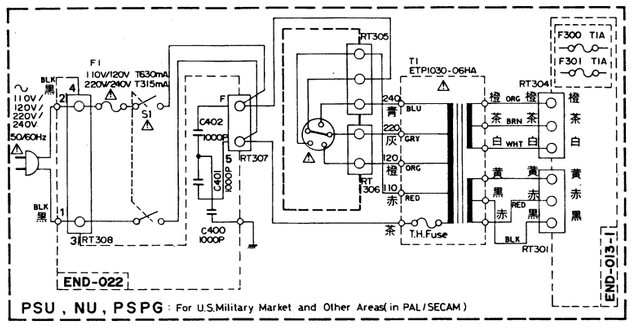
PSBS : For U.K.(in PAL/SECAM)



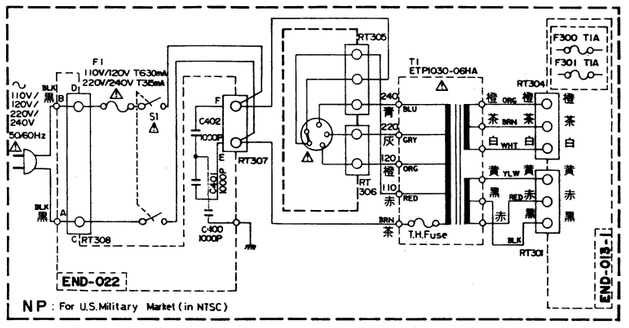
PSG , PSE : For Continental Europe (in PAL/SECAM)



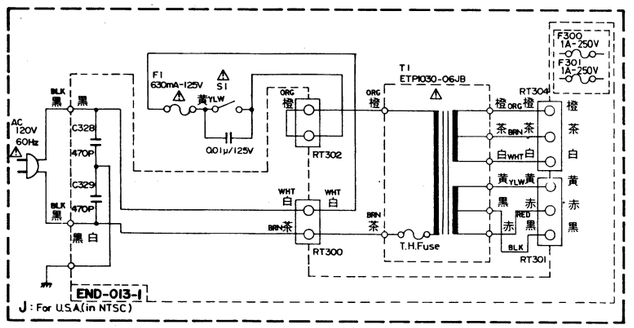
PSA : For Australia (in PAL/SECAM)



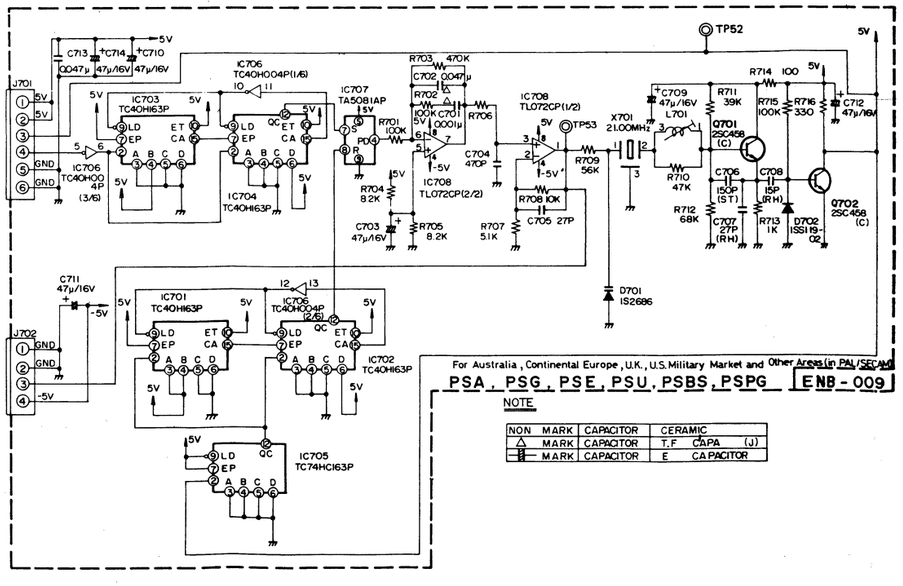
PSU , NU , PSPG : For U.S.Military Market and Other Areas(in PAL/SECAM)



NP : For U.S.Military Market (in NTSC)



J : For U.S.A.(in NTSC)

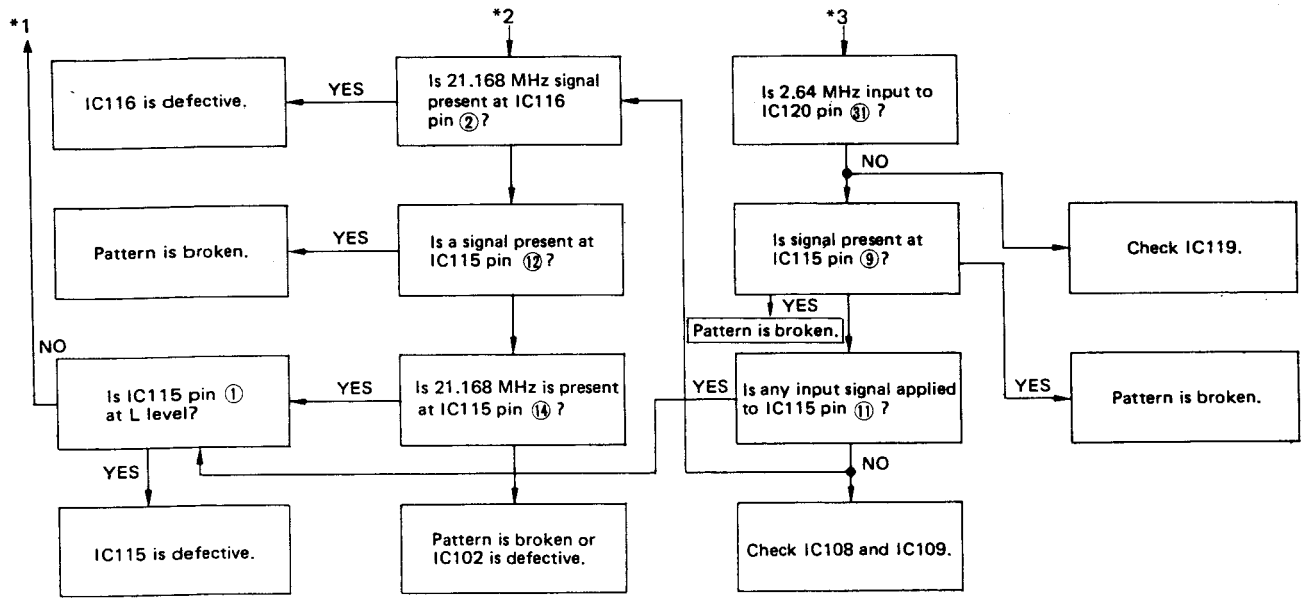


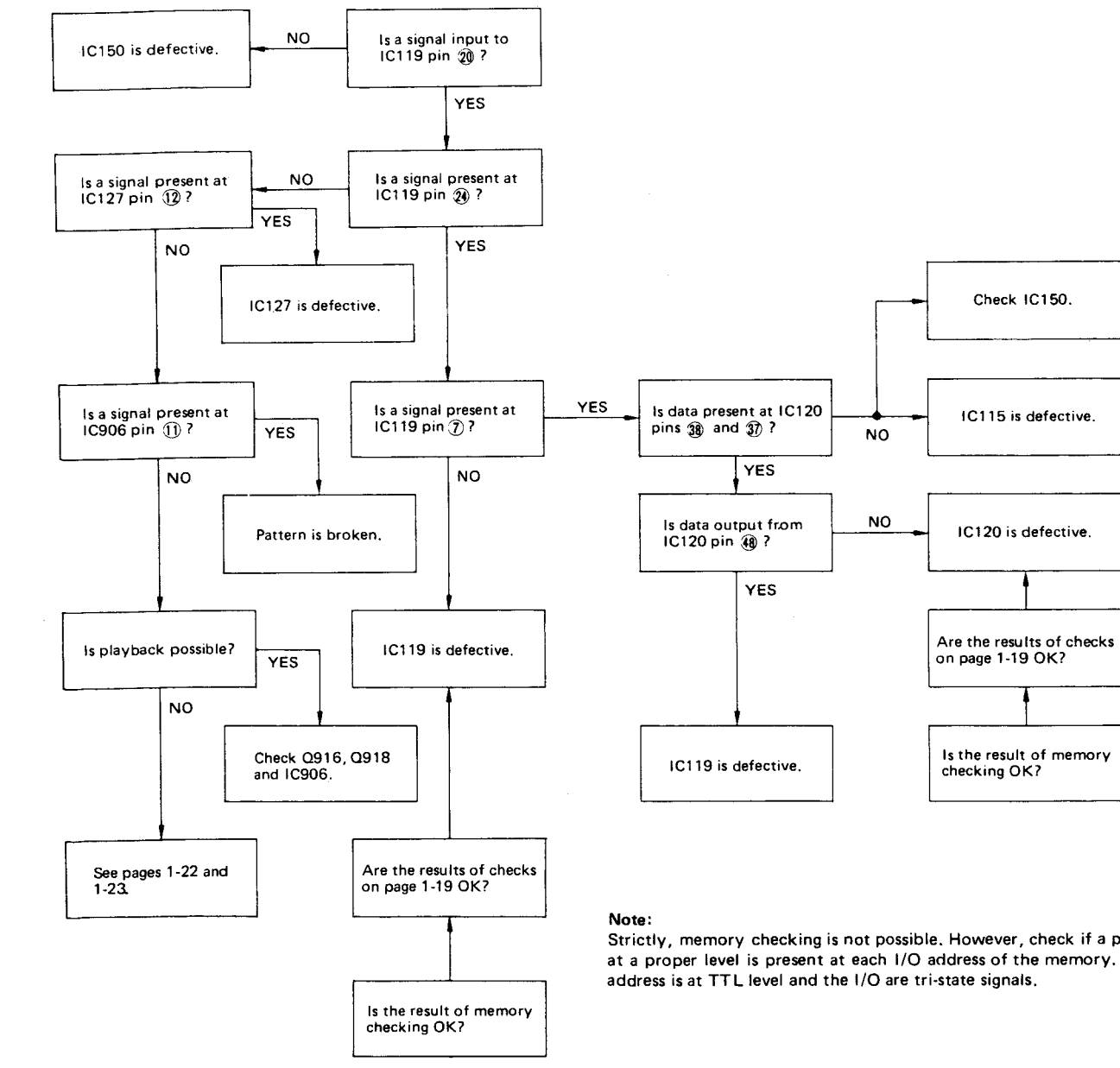
For Australia , Continental Europe , U.K., U.S.Military Market and Other Areas (in PAL/SECAM)

PSA , PSG , PSE , PSU , PSBS , PSPG ENB-009

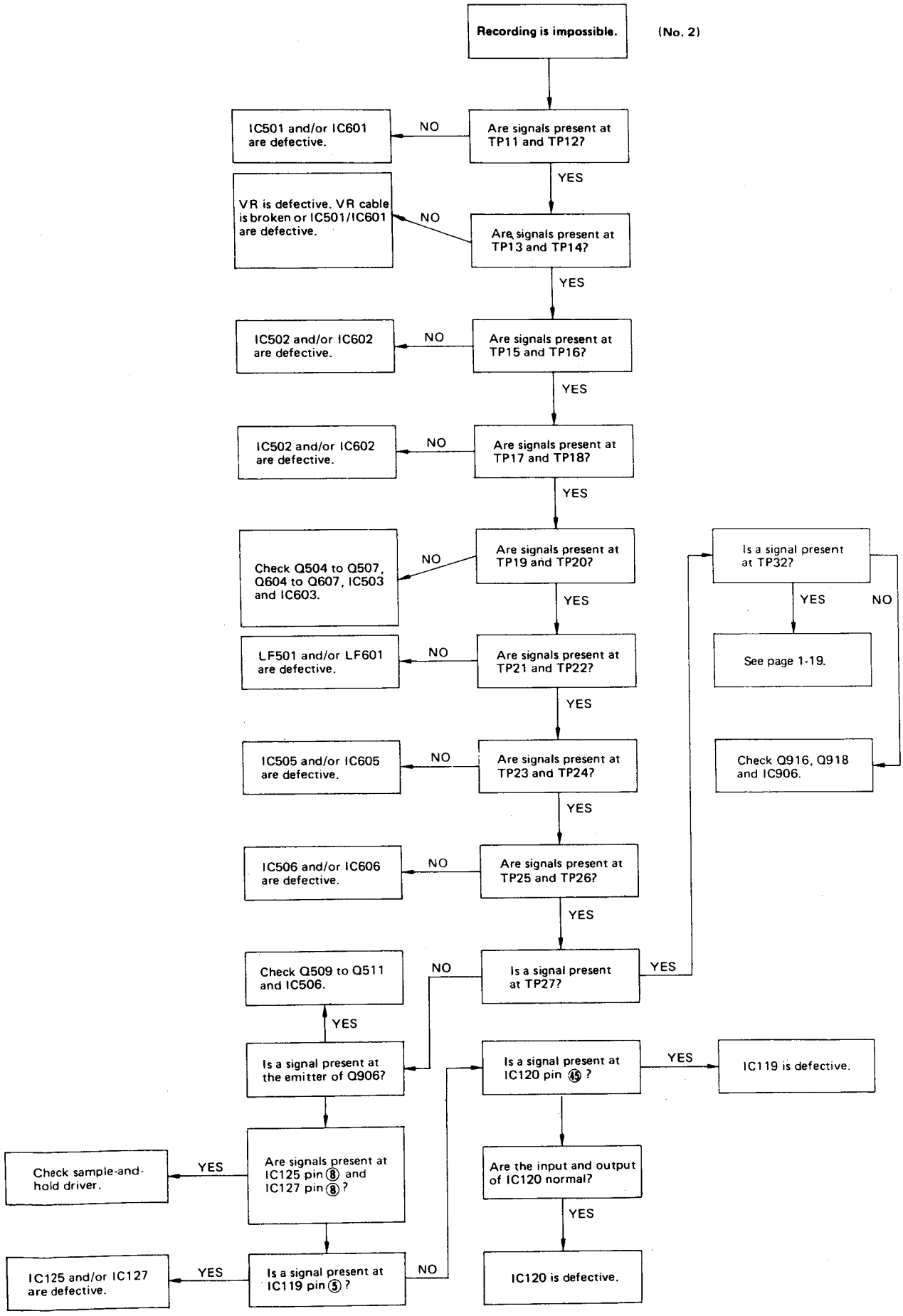
NOTE

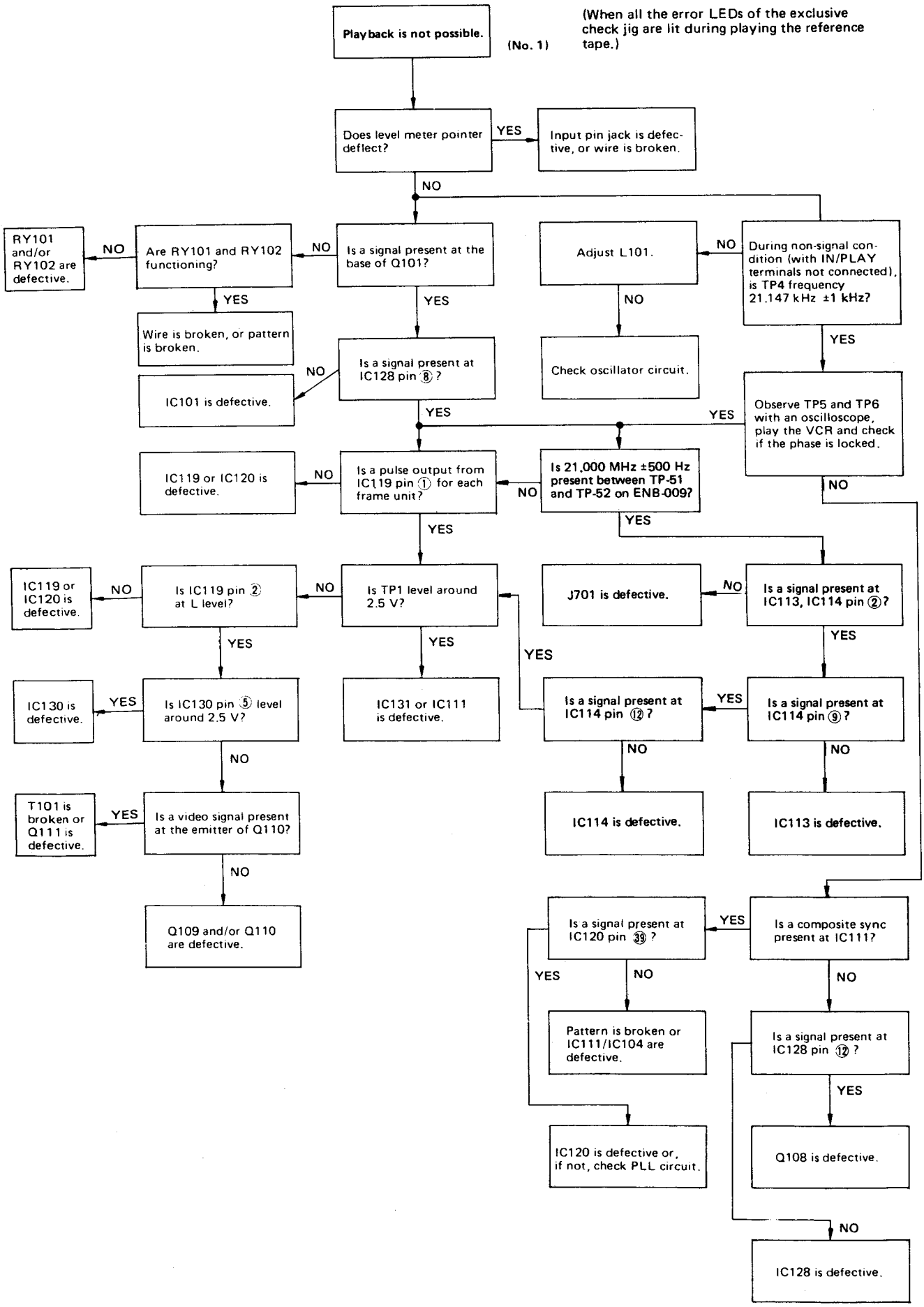
NON MARK	CAPACITOR	CERAMIC	
△ MARK	CAPACITOR	T.F CAPA	(J)
⊣⊢ MARK	CAPACITOR	E CAPACITOR	

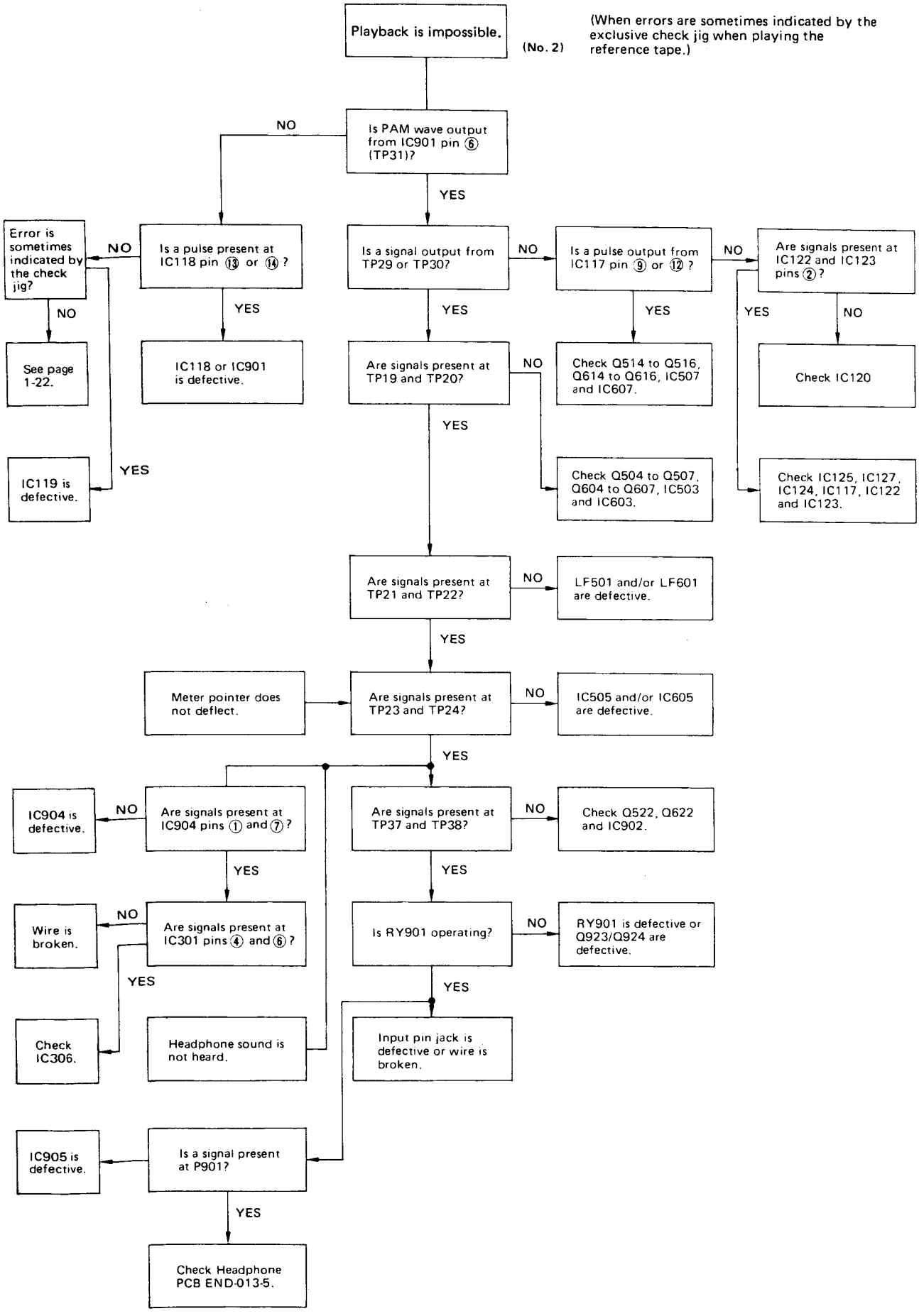


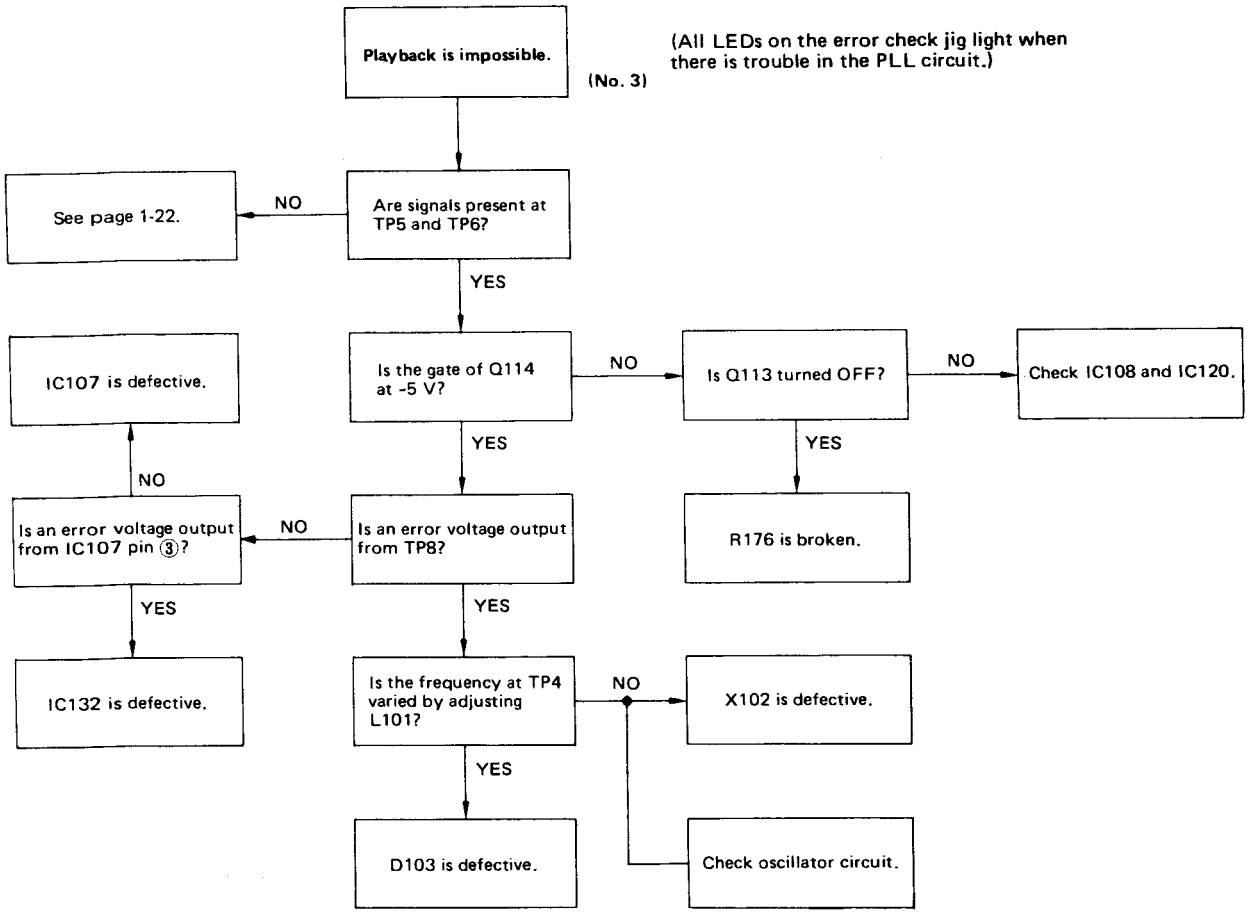


Note:
Strictly, memory checking is not possible. However, check if a pulse at a proper level is present at each I/O address of the memory. The address is at TTL level and the I/O are tri-state signals.

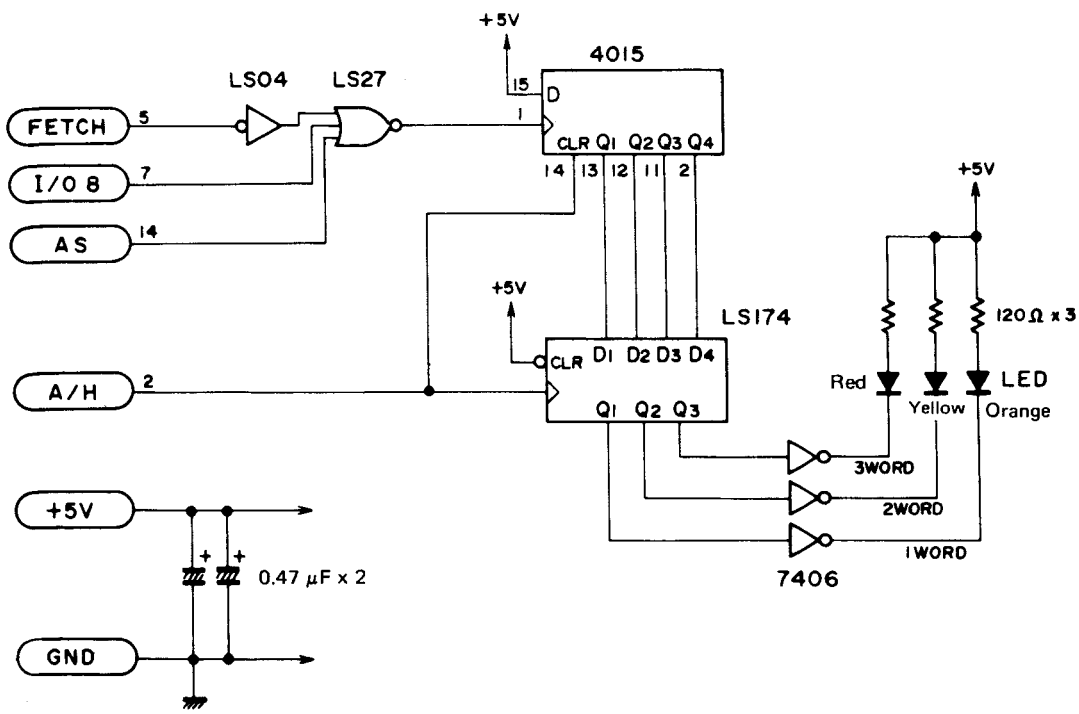

Recording is impossible.
(No. 2)
Are signals present at TP11 and TP12?
NO
IC501 and/or IC601 are defective.
YES
Are signals present at TP13 and TP14?
NO
VR is defective. VR cable is broken or IC501/IC601 are defective.
YES
Are signals present at TP15 and TP16?
NO
IC502 and/or IC602 are defective.
YES
Are signals present at TP17 and TP18?
NO
IC502 and/or IC602 are defective.
YES
Are signals present at TP19 and TP20?
NO
Check Q504 to Q507, Q604 to Q607, IC503 and IC603.
YES
Are signals present at TP21 and TP22?
NO
LF501 and/or LF601 are defective.
YES
Are signals present at TP23 and TP24?
NO
IC505 and/or IC605 are defective.
YES
Are signals present at TP25 and TP26?
NO
IC506 and/or IC606 are defective.
YES
Is a signal present at TP27?
YES
NO
Check Q509 to Q511 and IC506.
YES
Is a signal present at the emitter of Q906?
NO
Is a signal present at TP32?
YES
NO
See page 1-19.
Check Q916, Q918 and IC906.
Is a signal present at IC120 pin (45)?
YES
IC119 is defective.
Are the input and output of IC120 normal?
YES
IC120 is defective.
Are signals present at IC125 pin (8) and IC127 pin (8)?
YES
Check sample-and-hold driver.
Is a signal present at IC119 pin (5)?
NO
YES
IC125 and/or IC127 are defective.


Playback is not possible.
(No. 1)
(When all the error LEDs of the exclusive check jig are lit during playing the reference tape.)
Does level meter pointer deflect?
YES
Input pin jack is defective, or wire is broken.
NO
RY101 and/or RY102 are defective.
NO
Are RY101 and RY102 functioning?
NO
Is a signal present at the base of Q101?
YES
Wire is broken, or pattern is broken.
IC101 is defective.
NO
Is a signal present at IC128 pin ⑧?
YES
IC119 or IC120 is defective.
NO
Is a pulse output from IC119 pin ① for each frame unit?
YES
IC119 or IC120 is defective.
NO
Is IC119 pin ② at L level?
NO
Is TP1 level around 2.5 V?
YES
IC130 is defective.
YES
Is IC130 pin ⑤ level around 2.5 V?
YES
IC131 or IC111 is defective.
NO
T101 is broken or Q111 is defective.
YES
Is a video signal present at the emitter of Q110?
NO
Q109 and/or Q110 are defective.
Adjust L101.
NO
During non-signal condition (with IN/PLAY terminals not connected), is TP4 frequency 21.147 kHz ±1 kHz?
NO
Check oscillator circuit.
YES
Observe TP5 and TP6 with an oscilloscope, play the VCR and check if the phase is locked.
YES
NO
Is 21.000 MHz ±500 Hz present between TP-51 and TP-52 on ENB-009?
NO
YES
J701 is defective.
NO
Is a signal present at IC113, IC114 pin ②?
YES
Is a signal present at IC114 pin ⑫?
YES
Is a signal present at IC114 pin ⑨?
YES
NO
NO
IC114 is defective.
IC113 is defective.
Is a signal present at IC120 pin ㊴?
YES
Is a composite sync present at IC111?
YES
NO
NO
Pattern is broken or IC111/IC104 are defective.
Is a signal present at IC128 pin ⑫?
YES
IC120 is defective or, if not, check PLL circuit.
Q108 is defective.
NO
IC128 is defective.


Playback is impossible.
(No. 2)
(When errors are sometimes indicated by the exclusive check jig when playing the reference tape.)
Is PAM wave output from IC901 pin ⑥ (TP31)?
NO
YES
Error is sometimes indicated by the check jig?
NO
See page 1-22.
YES
IC119 is defective.
Is a pulse present at IC118 pin ⑬ or ⑭?
NO
YES
IC118 or IC901 is defective.
Is a signal output from TP29 or TP30?
NO
YES
Is a pulse output from IC117 pin ⑨ or ⑫?
NO
YES
Check Q514 to Q516, Q614 to Q616, IC507 and IC607.
Are signals present at IC122 and IC123 pins ②?
NO
YES
Check IC120
YES
Check IC125, IC127, IC124, IC117, IC122 and IC123.
Are signals present at TP19 and TP20?
NO
YES
Check Q504 to Q507, Q604 to Q607, IC503 and IC603.
Are signals present at TP21 and TP22?
NO
YES
LF501 and/or LF601 are defective.
Meter pointer does not deflect.
Are signals present at TP23 and TP24?
NO
YES
IC505 and/or IC605 are defective.
IC904 is defective.
NO
Are signals present at IC904 pins ① and ⑦?
YES
Are signals present at TP37 and TP38?
NO
YES
Check Q522, Q622 and IC902.
Wire is broken.
NO
Are signals present at IC301 pins ④ and ⑥?
YES
Is RY901 operating?
NO
YES
RY901 is defective or Q923/Q924 are defective.
Check IC306.
Headphone sound is not heard.
Input pin jack is defective or wire is broken.
IC905 is defective.
Is a signal present at P901?
YES
Check Headphone PCB END-013-5.



Error Check Jig (W3144-003) Circuit Diagram



MEMO

PARTS LIST

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1. Exploded View and Part Numbers List	2-2
2. Printed Circuit Board Ass'y and Parts List	2-5
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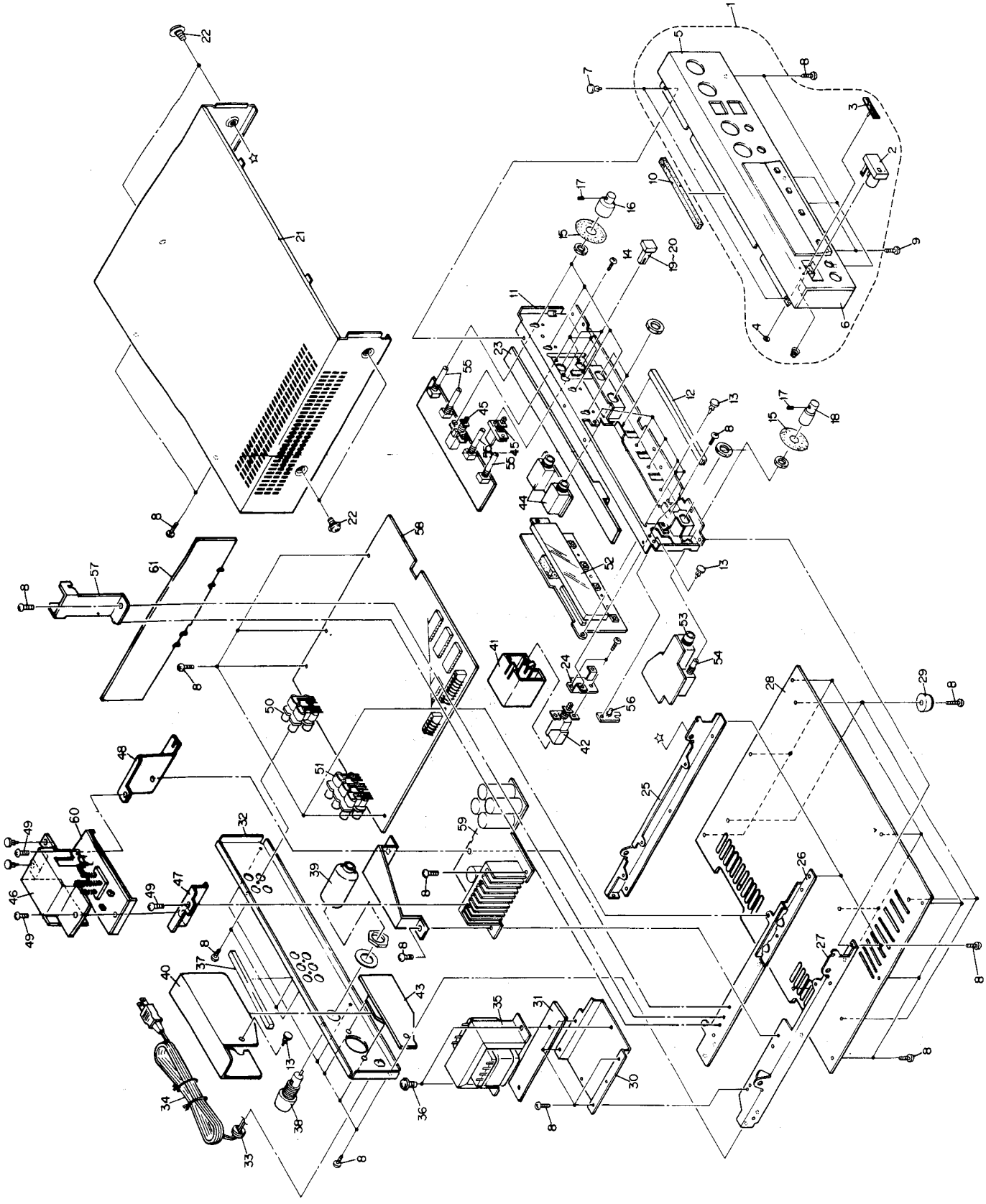
1. EXPLODED VIEW AND PART NUMBERS LIST



⚠	No.	Part Number	Part Name	Q'ty	Description	Areas
	1	EFP-VP100NE	Front Panel Ass'y	1		J, NP, NU
		EFP-VP100PE	Front Panel Ass'y	1		PSA, PSBS, PSE, PSG, PSPG, PSU
		E24533-002	Front Panel	1		
		E302945-001	Sub Panel	1		J, NP, NU
		E302945-002	Sub Panel	1		PSA, PSBS, PSE, PSG, PSPG, PSU
		E70916-001	Rec Push knob Escution	2		
		E302833-004	Push Knob Ass'y	1		J, NP, NU
		E302833-006	Push Knob Ass'y	1		PSA, PSBS, PSE, PSG, PSPG, PSU
		E70560-001	Window Screen	1		
		E302947-001	FL Escution	1		
		E70561-001	FL Screen	1		
	2	E302811-001	Push Knob Ass'y	1	Power	
	3	E70912-001	JVC Mark	1		
	4	E60912-003	Speed Nut	1		
	5	E302809-002	Side Fitting	1		
	6	E302809-003	Side Fitting	1		
	7	E48729-009	Plastic Rivet	2		
	8	SBSB3008M	Screw	40		
	9	SDSB3008M	Screw	2		
	10	EXO100005N30S	Spacer	1		
	11	E24535-001	Front Bracket	1		
	12	E65778-001	Spacer	1		
	13	E48729-008	Plastic Rivet	4		
	14	E65119-001	Screw	4		
	15	E69559-007	Spacer	5		
	16	E70865-001	Knob	4		
	17	YWS3003M	Set Screw	5		
	18	E70866-001	H.P. Level	1		
	19	E302817-003	Rec Push Knob	1	REC	
	20	E302817-004	Rec Push Knob	1	REC MUTE	
	21	E24476-002	Metal Cover	1		
	22	E61660-004	Screw	4		
	23	E303397-001	Spacer	1		
	24	E70867-001	Switch Bracket	1		
	25	E302819-001	Side Bracket	1	R	
	26	E302820-001	Center Bracket	1		
	27	E302818-001	Side Bracket	1	L	
	28	E24463-010	Bottom Cover	1		
	29	E47227-020	Foot	4		
	30	E70868-002	Trans Bracket	1		
	31	E71416-001	Spacer	1		
	32	E24536-002	Rear Panel	1		J
		E24536-003	Rear Panel	1		PSG, PSE
		E24536-004	Rear Panel	1		PSA, PSBS
		E24536-005	Rear Panel	1		PSPG, PSU
		E24536-006	Rear Panel	1		NP,NU
	33	QHS3876-162	Cord Stopper	1		Except PSBS
		QHS3876-162BS	Cord Stopper	1		PSBS only
⚠	34	QMP1200-200	Power Cord	1		J
		QMP7600-250	Power Cord	1		NP, NU, PSPG, PSU
		QMP2560-244	Power Cord	1		PSA
		QMP3900-200	Power Cord	1		PSG, PSE
		QMP9017-008BS	Power Cord	1		PSBS
⚠	35	ETP1030-06JB	Power Transformer	1		J
		ETP1030-06HA	Power Transformer	1		NP, NU, PSPG, PSU
		ETP1030-06XA	Power Transformer	1		PSE, PSG
		ETP1030-06AA	Power Transformer	1		PSA
		ETP1030-06AABS	Power Transformer	1		PSBS
	36	E65389-004	Screw	2		
	37	EXO200005N20S	Felt Spacer	1		

⚠	No.	Part Number	Part Name	Q'ty	Description	Areas
	38	QMG0201-003	Fuse Holder	1		J only
		QMG0301-003	Fuse Holder	1		Except J, PSBS
		QMG0301-003BS	Fuse Holder	1		PSBS only
	39	E69291-001	Fuse Cover	1		
	40	E303503-001	Protect Cover	1		NP, NU PSPG, PSU
	41	E67520-002	Switch Cover	1		J only
		E301869-003	Switch Cover	1		Except J
⚠	42	QSP1106-004	Power Switch	1		J only
		QSP2206-002	Power Switch	1		Except J, PSBS
		QSP2206-002BS	Power Switch	1		PSBS only
⚠	43	QSR0074-001	Voltage Selector	1		NP, NU, PSPG, PSU
	44	QMS6303-018	Mic Jack	1		
	45	QSP0219-102	Push Switch	1	REC/PLAY	
	46	E303593-001	Protect Cover	1		
	47	E71854-001	C.B. Bracket	1		
	48	E71855-001	C.B. Bracket	1		
	49	SBS3008N	Screw	3		
	50	EMN00TV-403A	4P Pin Jack	1		
	51	EMN00TV-402A	4P Pin Jack	1		J, NP, NU only
		EMN00TV-602A	6P Pin Jack	1		Except J, NP, NU
	52	ELU0001-022	FL Tube	1		
	53	QMS6302-123	3P H.P. Jack	1		
	54	QVZ1005-001	Variable Resistor	1		
	55	QVZ1004-001	Variable Resistor	1		
	56	SLR55DC20F	L.E.D.	1		
	57	E70869-001	C.B. Holder	1		Except J, NP, NU
	58	ENB-008	Logic P.C. Board Ass'y	1		
	59	END-013	Power & etc. P.C. Board Ass'y	1		
	60	END-022	AC Power P.C. Board Ass'y	1		
	61	ENB-009	Sub Logic P.C. Board Ass'y	1		Except J, NP, NU

⚠: Safety Parts

⚠: Safete parts

The Marks for Designated Areas
J..... U.S.A.
PSA ..... for Australia in PAL/SECAM
PSE..... for Europe in PAL/SECAM
PSG ..... for West Germany in PAL/SECAM
PSBS ..... for U.K. in PAL/SECAM
NP..... for U.S. Military Market in NTSC
PSPG ..... for U.S. Military Market in PAL/SECAM
NU ..... for Other Countries in NTSC
PSU ..... for Other Countries in PAL/SECAM

No mark indicates all areas.

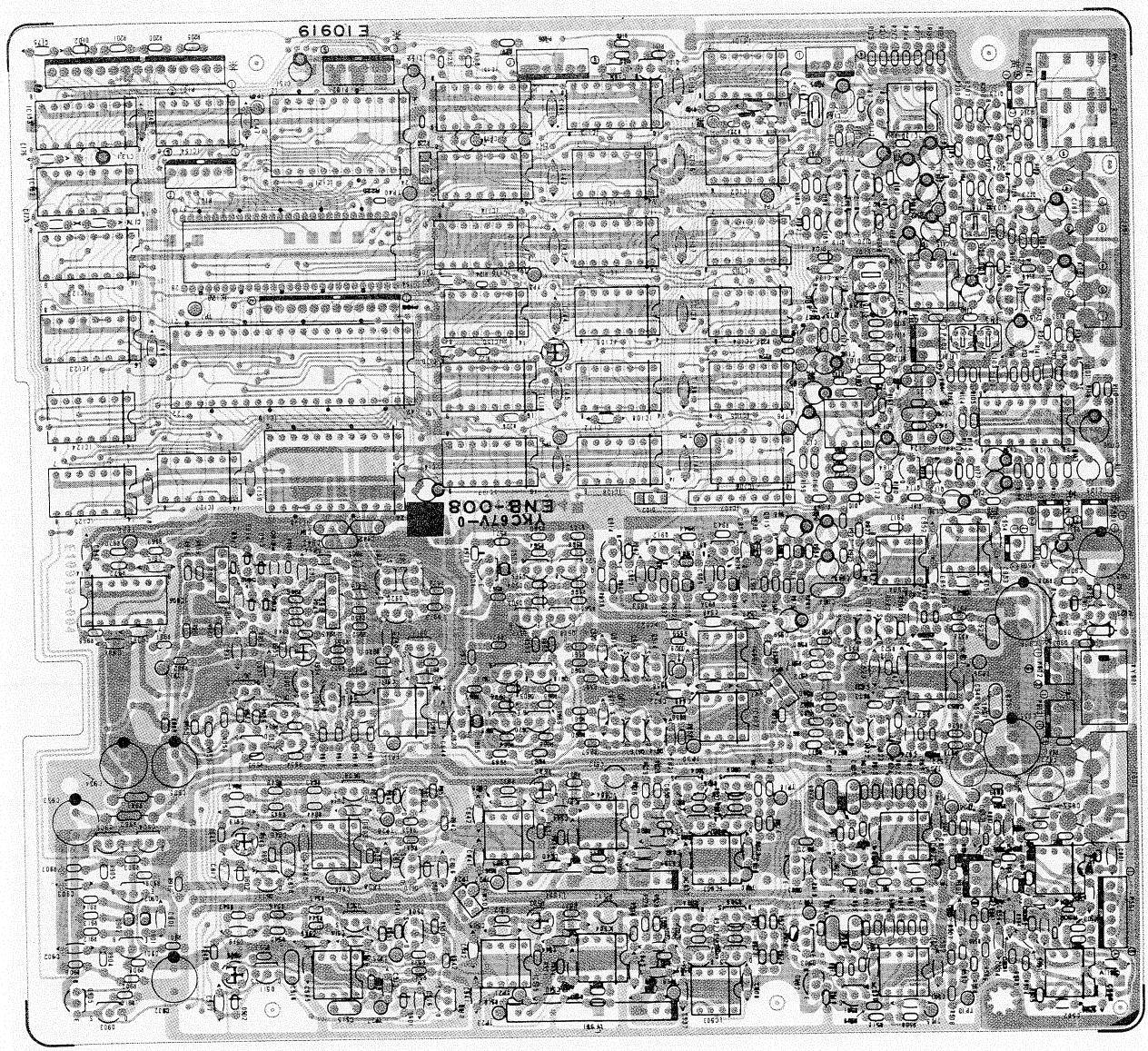
2. Printed Circuit Board Ass'y and Parts List

2-(1) ENB-008 □ Logic P.C. Board Ass'y

Note: ENB-008 □ varies according to the areas employed. See note (1) when placing an order.

Note (1)

P.C. Board Ass'y	Designated Areas
ENB-008 [B]	for U.S.A. in NTSC
ENB-008 [C]	for U.K. in PAL/SECAM
ENB-008 [D]	for Europe, Australia & West Germany in PAL/ SECAM
ENB-008 [E]	for U.S. Military Market & other Countries in PAL/ SECAM
ENB-008 [F]	for U.S. Military Market & other Countries in NTSC



Transistors

⚠	Item No.	Part Number	Description		Areas
				Maker	
	Q101	2SC458(C,D)	SILICON	HITACHI	
	Q102	DTC144F	F.E.T.		
	Q103	2SC458(C,D)	F.E.T.	HITACHI	B
	Q103	2SC458(C,D)	F.E.T.	HITACHI	F
	Q104	2SA1029(C,D)	F.E.T.	HITACHI	
	Q105	2SC458(C,D)	F.E.T.	HITACHI	
	Q106	2SA1029(C)	F.E.T.	HITACHI	
	Q107	2SA1029(C)	F.E.T.	HITACHI	
	Q108	2SC458(C)	F.E.T.	HITACHI	
	Q109	2SA1029(C,D)	F.E.T.	HITACHI	
	Q110	2SC458(C,D)	F.E.T.	HITACHI	
	Q111	2SA1029(C)	F.E.T.	HITACHI	
	Q112	2SA1029(C)	SILICON	HITACHI	
	Q113	2SA1029(C)	SILICON	HITACHI	
	Q114	2SK163(L1)	SILICON	NEC	
	Q115	2SC458(C)	SILICON	HITACHI	
	Q116	2SC458(C)	SILICON	HITACHI	
	Q117	2SC458(C)	F.E.T.	HITACHI	
	Q118	2SC458(C)	F.E.T.	HITACHI	
	Q119	2SA1029(C)	SILICON	HITACHI	
	Q120	2SA1029(C)	SILICON	HITACHI	
	Q121	2SC458(C)	SILICON	HITACHI	
	Q122	2SC458(C)	F.E.T.	HITACHI	
	Q123	2SC458(C,D)	SILICON	HITACHI	D
	Q123	2SC458(C,D)	SILICON	HITACHI	F
	Q124	2SC458(C,D)	F.E.T.	HITACHI	
	Q125	2SC458(C,D)	SILICON	HITACHI	
	Q126	DTC144F	F.E.T.		
	Q127	2SC458(C)	F.E.T.	HITACHI	
	Q501	2SK163(L1)	F.E.T.	NEC	
	Q502	2SA1029(C,D)	F.E.T.	HITACHI	
	Q503	2SC458(C,D)	SILICON	HITACHI	
	Q504	2SK163(L1)	SILICON	NEC	
	Q505	2SK163(L1)	SILICON	NEC	
	Q506	2SK163(L1)	SILICON	NEC	
	Q507	2SK163(L1)	SILICON	NEC	
	Q508	2SK105(H)	SILICON	NEC	
	Q509	2SK105(H)	SILICON	NEC	
	Q510	2SK163(L1)	SILICON	NEC	
	Q511	2SK163(L1)	SILICON	NEC	
	Q512	2SK105(H)	SILICON	NEC	
	Q513	2SK105(H)	SILICON	NEC	
	Q514	2SK105(H)	F.E.T.	NEC	
	Q515	2SK105(H)	F.E.T.	NEC	
	Q516	2SK163(L1)	F.E.T.	NEC	
	Q517	2SA1029(C,D)	SILICON	HITACHI	
	Q518	2SC458(C,D)	SILICON	HITACHI	
	Q519	2SA1029(C,D)	SILICON	HITACHI	
	Q520	2SC458(C,D)	SILICON	HITACHI	
	Q521	2SC458(C,D)	SILICON	HITACHI	
	Q522	2SK105(H)	F.E.T.	NEC	
	Q523	2SK163(L1)	F.E.T.	NEC	
	Q524	2SK105(H)	F.E.T.	NEC	
	Q601	2SK163(L1)	F.E.T.	NEC	
	Q602	2SA1029(C,D)	SILICON	HITACHI	

Transistors

⚠	Item No.	Part Number	Description		Areas
				Maker	
	Q603	2SC458(C,D)	SILICON	HITACHI	
	Q604	2SK163(L1)	SILICON	NEC	
	Q605	2SK163(L1)	SILICON	NEC	
	Q606	2SK163(L1)	SILICON	NEC	
	Q607	2SK163(L1)	SILICON	NEC	
	Q608	2SK105(H)	F.E.T.	NEC	
	Q609	2SK105(H)	F.E.T.	NEC	
	Q610	2SK163(L1)	SILICON	NEC	
	Q611	2SK163(L1)	SILICON	NEC	
	Q612	2SK105(H)	F.E.T.	NEC	
	Q613	2SK105(H)	F.E.T.	NEC	
	Q614	2SK105(H)	F.E.T.	NEC	
	Q615	2SK105(H)	F.E.T.	NEC	
	Q616	2SK163(L1)	F.E.T.	NEC	
	Q617	2SA1029(C,D)	SILICON	HITACHI	
	Q618	2SC458(C,D)	SILICON	HITACHI	
	Q619	2SA1029(C,D)	SILICON	HITACHI	
	Q620	2SC458(C,D)	SILICON	HITACHI	
	Q621	2SC458(C,D)	SILICON	HITACHI	
	Q622	2SK105(H)	F.E.T.	NEC	
	Q623	2SK163(L1)	F.E.T.	NEC	
	Q624	2SK105(H)	F.E.T.	NEC	
	Q901	2SA1029(C,D)	F.E.T.	HITACHI	
	Q902	2SA1029(C,D)	F.E.T.	HITACHI	
	Q903	2SK163(L1)	F.E.T.	NEC	
	Q904	2SK163(L1)	F.E.T.	NEC	
	Q905	2SA1029(C,D)	SILICON	HITACHI	
	Q906	2SA1029(C,D)	SILICON	HITACHI	
	Q907	2SK105(H)	F.E.T.	NEC	
	Q908	2SK105(H)	F.E.T.	NEC	
	Q909	2SK105(H)	F.E.T.	NEC	
	Q909	2SK68A(N)	F.E.T.		
	Q910	2SK105(H)	F.E.T.	NEC	
	Q911	2SK105(H)	F.E.T.	NEC	
	Q912	2SA1029(C,D)	SILICON	HITACHI	
	Q913	2SA1029(C,D)	SILICON	HITACHI	
	Q914	2SA1029(C,D)	SILICON	HITACHI	
	Q915	2SA1029(C,D)	SILICON	HITACHI	
	Q916	UPA74V(P,F)	SILICON	NEC	
	Q918	UPA75V(P,F)	SILICON	NEC	
	Q920	2SK163(M1)	F.E.T.	HITACHI	
	Q921	2SK163(M1)	F.E.T.	HITACHI	
	Q922	2SK163(M1)	F.E.T.	HITACHI	
	Q923	2SC458(C,D)	SILICON	HITACHI	
	Q924	2SC458(C,D)	SILICON	HITACHI	
	Q925	2SA1029(C,D)	SILICON	HITACHI	

IC

⚠	Item No.	Part Number	Description	Maker	Areas
	IC101	SN74ALS00AN	I.C.	TOSHIBA	
	IC102	TC40H004P	I.C.		
	IC103	SN74LS74AN	I.C.		D
	IC103	SN74LS74AN	I.C.		F
	IC104	SN74LS08N	I.C.		
	IC105	SN74LS09N	I.C.		D
	IC105	SN74LS09N	I.C.		F
	IC106	SN74LS08N	I.C.		
	IC107	TC5081AP	I.C.	TOSHIBA	
	IC108	SN74LS04N	I.C.		
	IC109	SN74LS00N	I.C.		
	IC110	SN74LS74AN	I.C.		
	IC111	SN74LS04N	I.C.		
	IC113	TC74HC163P	I.C.		
	IC114	TC74HC163P	I.C.		
	IC115	TC40H157P	I.C.		
	IC116	TC74HC163P	I.C.		
	IC117	SN74LS157N	I.C.		
	IC118	PCM53JG-I	I.C.		
	IC119	MSM61030RS	I.C.		
	IC120	TMS3475NL	I.C.		
	IC122	SN74LS161AN	I.C.		
	IC123	SN74LS161AN	I.C.		
	IC124	SN74LS04N	I.C.		
	IC125	SN74LS08N	I.C.		
	IC126	SN74LS74AN	I.C.		
	IC127	SN74LS00N	I.C.		
	IC128	HA11401	I.C.	HITACHI	
	IC130	NJM4558D	I.C.	DAINICHI	
	IC131	TL810CP	I.C.		
	IC132	TL072CP	I.C.		
	IC150	SN74LS04N	I.C.		
	IC151	SN74LS123N	I.C.		
	IC152	SN74LS109AN	I.C.		
	IC153	SN74LS109AN	I.C.		
	IC154	SN74LS08N	I.C.		
	IC501	LM833AN	I.C.		
	IC502	NJM5532D	I.C.	DAINICHI	
	IC503	LM318P	I.C.		
	IC504	TL072CP	I.C.		
	IC505	NJM5534D-D	I.C.	DAINICHI	
	IC506	TL072CP	I.C.		
	IC507	TL071CP	I.C.		
	IC601	LM833AN	I.C.		
	IC602	NJM5532D	I.C.	DAINICHI	
	IC603	LM318P	I.C.		
	IC604	TL072CP	I.C.		
	IC605	NJM5534D-D	I.C.	DAINICHI	
	IC606	TL072CP	I.C.		
	IC607	TL071CP	I.C.		
	IC901	LM318P	I.C.		
	IC902	NJM5532D	I.C.	DAINICHI	
	IC904	NJM4558D	I.C.	DAINICHI	
	IC905	LM833AN	I.C.		
	IC906	LN361N	I.C.		

Diodes

⚠	Item No.	Part Number	Description	Maker	Areas
	D101	1SS119	SILICON	HITACHI	
	D102	1SS119	SILICON	HITACHI	
	D103	1S2686	SILICON	DAINICHI	
	D104	1SS119	SILICON	HITACHI	
	D106	1S188FM	SILICON	SANYO	
	D501	1SS119	SILICON	HITACHI	
	D502	1SS119	SILICON	HITACHI	
	D503	1SS119	SILICON	HITACHI	
	D504	1SS119	SILICON	HITACHI	
	D505	MC921	SILICON	RYOYO	
	D601	1SS119	SILICON	HITACHI	
	D602	1SS119	SILICON	HITACHI	
	D603	1SS119	SILICON	HITACHI	
	D604	1SS119	SILICON	HITACHI	
	D605	MC921	SILICON	RYOYO	
	D901	MC931	SILICON	RYOYO	
	D902	MC921	SILICON	RYOYO	
	D903	1SS119	SILICON	HITACHI	
	D904	RD5.6EB3	SILICON	NEC	
	D905	1SS119	SILICON	HITACHI	
	D906	MC921	SILICON	RYOYO	
	D908	MC931	SILICON	RYOYO	
	D910	MC931	SILICON	RYOYO	
	D912	1SS119	SILICON	HITACHI	
	D913	1SS119	SILICON	HITACHI	
	D914	1SS119	SILICON	HITACHI	
	D915	1SS119	SILICON	HITACHI	
	D916	MC911	SILICON	RYOYO	
	D917	1SS119	SILICON	HITACHI	

Capacitors

⚠	Item No.	Part Number	Description			Areas
	C102	QCS31HJ-4R0	4.0pF	50V	CERAMIC	
	C103	QCS31HJ-4R0	4.0pF	50V	CREAMIC	
	C104	QET61HM-475	4.7MF	50V	ELECTRO	
	C105	QET61HM-225	2.2MF	50V	NON POLE	
	C106	QET61CM-476	47MF	16V	ELECTRO	
	C107	QCT26TH-150	15pF	50V	CERAMIC	
	C108	QCT25TH-120	12pF	50V	CERAMIC	
	C109	QCS31HJ-221	220pF	50V	CERAMIC	C
	C109	QCS31HJ-221	220pF	50V	CERAMIC	D
	C109	QCS31HJ-221	220pF	50V	CERAMIC	E
	C109	QCS31HJ-560	56pF	50V	CERAMIC	B
	C109	QCS31HJ-560	56pF	50V	CERAMIC	F
	C110	QCS31HJ-151	150pF	50V	CERAMIC	
	C111	QET51EM-106	10MF	25V	ELECTRO	
	C112	QET51EM-106	10MF	25V	ELECTRO	
	C113	QCS31HJ-331	330pF	50V	CERAMIC	B
	C113	QCS31HJ-331	330pF	50V	CERAMIC	F
	C113	QFP31HG-621	620pF	50V	CERAMIC	C
	C113	QFP31HG-621	620pF	50V	50V	D
	C113	QCS31HG-621	620pF	50V	CERAMIC	E

Capacitors

⚠	Item No.	Part Number	Description			Areas
	C115	QEB61EM-225	2.2MF	25V	ELECTRO	
	C119	QCS31HJ-270	27pF	50V	CERAMIC	
	C120	QCS31HJ-150	15pF	50V	CERAMIC	
	C121	QET61CM-476	47MF	16V	ELECTRO	
	C122	QFV71HJ-224	0.22MF	50V	T.FILM	
	C123	QFV81HJ-154	0.15	50V	T.FILM	
	C124	QFV81HJ-273	0.027MF	50V	T.FILM	
	C125	QFV71HJ-273	0.027MF	50V	T.FILM	
	C126	QFV71HJ-563	0.056MF	50V	T.FILM	
	C127	QCT26SH-151	150pF	50V	CERAMIC	
	C128	QCT26RH-270	27pF	50V	CERAMIC	
	C129	QCT26RH-150	15pF	50V	CERAMIC	
	C130	QET61EM-106	10MF	25V	ELECTRO	
	C131	QET61EM-106	10MF	25V	ELECTRO	
	C132	QET51EM-106	10MF	25V	ELECTRO	
	C133	QET51EM-106	10MF	25V	ELECTRO	
	C134	QET51HM-475	10MF	25V	ELECTRO	
	C135	QCC31EM-473	0.047MF	25V	CERAMIC	
	C136	QCC31EM-473	0.047MF	25V	CERAMIC	
	C137	QCC31EM-473	0.047MF	25V	CERAMIC	
	C138	QCC31EM-473	0.047MF	25V	CERAMIC	
	C139	QCC31EM-473	0.047MF	25V	CERAMIC	
	C140	QCC31EM-473	0.047MF	25V	CERAMIC	
	C141	QCC31EM-473	0.047MF	25V	CERAMIC	
	C142	QCC31EM-473	0.047MF	25V	CERAMIC	
	C143	QCC31EM-473	0.047MF	25V	CERAMIC	
	C144	QCC31EM-473	0.047MF	25V	CERAMIC	
	C145	QCC31EM-473	0.047MF	25V	CERAMIC	
	C146	QCC21EM-473	0.047MF	25V	CERAMIC	
	C147	QCC31EM-473	0.047MF	25V	CERAMIC	
	C148	QCC31EM-473	0.047MF	25V	CERAMIC	
	C149	QCC31EM-473	0.047MF	25V	CERAMIC	
	C150	QCC31EM-473	0.047MF	25V	CERAMIC	
	C151	QET61CM-476				
	C152	QET61CM-476	47MF	16V	ELECTRO	
	C153	QET61CM-476	47MF	16V	ELECTRO	
	C154	QET61CM-476	47MF	16V	ELECTRO	
	C160	QET51CM-476	47MF	16V	ELECTRO	
	C161	QET61CM-476	47MF	16V	ELECTRO	
	C162	QET61CM-476	47MF	16V	ELECTRO	
	C163	QET51CM-476	47MF	16V	ELECTRO	
	C164	QET61CM-476	47MF	16V	ELECTRO	
	C165	QET51CM-476	47MF	16V	ELECTRO	
	C166	QET61CM-476	47MF	16V	ELECTRO	
	C167	QET61CM-476	47MF	16V	ELECTRO	
	C168	QCS31HJ-151	150pF	50V	CERAMIC	
	C169	QFV81HJ-104	0.1MF	50V	T.FILM	
	C170	QCS31HJ-4R0	4.0pF	50V	CERAMIC	
	C171	QET51EM-107	100MF	25V	ELECTRO	
	C172	QCS31HJ-560	56pF	50V	CERAMIC	
	C173	QCS31HJ-470	47pF	50V	CERAMIC	
	C174	QCS31HJ-470	47pF	50V	CERAMIC	
	C175	QCS31HJ-470	47pF	50V	CERAMIC	
	C176	QCS31HJ-470	47pF	50V	CERAMIC	
	C185	QCC11EM-103	0.01MF	25V	CERAMIC	

Capacitors

⚠	Item No.	Part Number	Description			Areas
	C215	QET61CM-476	47MF	16V	ELECTRO	
	C501	QCS21HJ-100	10pF	50V	CERAMIC	
	C502	QCS21HJ-470	47pF	50V	CRERAMIC	
	C503	QCS31HJ-220	22pF	50V	CERAMIC	
	C504	QCS31HJ-100	10pF	50V	CRERAMIC	
	C505	QFP81HG-362	3600pF	50V	POLY	
	C506	QFP81HG-331	330pF	50V	POLY	
	C507	QFV71HJ-104	0.1MF	50V	T.FILM	
	C508	QCS31HJ-330	33pF	50V	CERAMIC	
	C509	QCS31HJ-270	27pF	50V	CRERAMIC	
	C510	QCS31HJ-473	0.047MF	25V	CRERAMIC	
	C511	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C512	QEN61HM-106	10MF	50V	NON POLE	
	C513	QCS31HJ-101	100pF	50V	CERAMIC	
	C514	QCS31HJ-470	470pF	50V	CERAMIC	
	C515	QFP81HG-561	560pF	50V	POLY	
	C516	QCS31HJ-180	18pF	50V	CERAMIC	
	C517	QCS31HJ-180	18pF	50V	CERAMIC	
	C518	QFP81HG-561	560pF	50V	POLY	
	C519	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C520	QCS31HJ-5R0	5.0pF	50V	CERAMIC	
	C521	QCS21HJ-470	47pF	50V	CERAMIC	
	C522	QCC31EM-473	0.047	25V	CRERAMIC	
	C523	QCC31EM-473	0.047MF	25V	CERAMIC	
	C524	QCS31HJ-470	47pF	50V	CERAMIC	
	C525	QFP81HG-332	3300pF	50V	POLY	
	C527	QEN51HM-106	10MF	50V	NON POLE	
	C531	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C532	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C534	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C535	QCC21EM-473	0.047MF	25V	CRERAMIC	
	C536	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C539	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C540	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C541	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C542	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C543	QCC21EM-473	0.047MF	25V	CRERAMIC	
	C544	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C545	QCC21EM-473	0.047MF	25V	CRERAMIC	
	C546	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C547	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C548	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C551	QCS21HJ-101	100pF	50V	CRERAMIC	
	C552	QCS21HJ-101	100pF	50V	CRERAMIC	
	C553	QCS31HJ-101	100pF	50V	CRERAMIC	
	C554	QCS21HJ-101	100pF	50V	CRERAMIC	
	C577	QET51CM-227	220MF	16V	ELECTRO	
	C601	QCS31HJ-100	10pF	50V	CRERAMIC	
	C602	QCS31HJ-470	47pF	50V	CRERAMIC	
	C603	QCS31HJ-220	222pF	50V	CERAMIC	
	C604	QCS31HJ-100	10pF	50V	CRERAMIC	
	C605	QFP81HG-362	3600pF	50V	POLY	
	C606	QFP81HG-331	330pF	50V	POLY	
	C607	QFV71HJ-104	0.1MF	50V	T.FILM	
	C608	QCS31HJ-330	33pF	50V	CERAMIC	

Capacitors

⚠	Item No.	Part Number	Description			Areas
	C609	QCS31HJ-270	27pF	50V	CRERAMIC	
	C610	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C611	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C612	QEN61HM-106	10MF	50V	NON POLE	
	C613	QCS31HJ-101	100pF	50V	CRERAMIC	
	C614	QCS31HJ-470	47pF	50V	POLY	
	C615	QFP81HG-561	560pF	50V	POLY	
	C616	QCS31HJ-180	18pF	50V	CERAMIC	
	C617	QCS31HJ-180	18pF	50V	CERAMIC	
	C618	QFP81HG-561	560pF	50V	POLY	
	C619	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C621	QCS31HJ-470	47pF	50V	CERAMIC	
	C622	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C623	QCC31EM-473	0.047MF	25V	CRERAMIC	
	C624	QCS31HJ-470	47pF	50V	CERAMIC	
	C625	QFP81HG-332	3300pF	50V	POLY	
	C627	QEN51HM-106	10MF	50V	NON POLE	
	C631	QCC31EM-473	0.047MF	25V	CERAMIC	
	C632	QCC31EM-473	0.047MF	25V	CERAMIC	
	C634	QCC31EM-473	0.047MF	25V	CERAMIC	
	C635	QCC31EM-473	0.047MF	25V	CERAMIC	
	C636	QCC31EM-473	0.047MF	25V	CERAMIC	
	C639	QCC31EM-473	0.047MF	25V	CERAMIC	
	C640	QCC31EM-473	0.047MF	25V	CERAMIC	
	C641	QCC31EM-473	0.047MF	25V	CERAMIC	
	C642	QCC31EM-473	0.047MF	25V	CERAMIC	
	C643	QCC21EM-473	0.047MF	25V	CERAMIC	
	C644	QCC31EM-473	0.047MF	25V	CERAMIC	
	C645	QCC31EM-473	0.047MF	25V	CERAMIC	
	C646	QCC31EM-473	0.047MF	25V	CERAMIC	
	C647	QCC31EM-473	0.047MF	25V	CERAMIC	
	C648	QCC31EM-473	0.047MF	25V	CERAMIC	
	C651	QCS21HJ-101	100pF	50V	CERAMIC	
	C652	QCS21HJ-101	100pF	50V	CERAMIC	
	C653	QCS31HJ-101	100pF	50V	CERAMIC	
	C654	QCS21HJ-101	100pF	50V	CERAMIC	
	C901	QCC31EM-473	0.047MF	25V	CERAMIC	
	C902	QCS31HJ-101	100pF	50V	CERAMIC	
	C903	QCS31HJ-101	100pF	50V	CERAMIC	
	C904	QFV71HJ-104	0.1MF	50V	T.FLM	
	C905	QET51CM-227	220MF	16V	ELECTRO	
	C906	QET61CM-476	47MF	16V	ELECTRO	
	C907	QCS31HJ-101	100pF	50V	CERAMIC	
	C908	QCS21HJ-101	100pF	50V	CERAMIC	
	C910	QCC31EM-473	0.047MF	25V	CERAMIC	
	C911	QCS31HJ-121	120pF	50V	CERAMIC	
	C912	QCS31HJ-560	56pF	50V	CERAMIC	
	C913	QCS31HJ-4R0	4.0pF	50V	CERAMIC	
	C914	QCS31HJ-331	330pF	50V	CERAMIC	
	C915	QCS31HJ-3R0	100pF	50V	CERAMIC	
	C916	QCS31HJ-120	12pF	50V	CERAMIC	
	C917	QCC31EM-473	0.047MF	25V	CERAMIC	
	C932	QET51CM-227	220MF	50V	ELECTRO	
	C933	QET51CM-227	220MF	16V	ELECTRO	
	C934	QET51CM-227	220MF	16V	ELECTRO	

Capacitors

⚠	Item No.	Part Number	Description			Areas
	C935	QET51CM-227	220MF	16V	ELECTRO	
	C936	QCC31EM-473	0.047MF	25V	CERAMIC	
	C937	QCC31EM-473	0.047MF	25V	CERAMIC	
	C938	QCC21EM-473	0.047MF	25V	CERAMIC	
	C939	QCC31EM-473	0.047MF	25V	CERAMIC	
	C940	QCC31EM-473	0.047MF	25V	CERAMIC	
	C941	QFV71HJ-104	0.1MF	50V	T.FLM	
	C942	QFV71HJ-104	0.1MF	50V	T.FLM	
	C943	QFV81HJ-104	0.1MF	50V	T.FLM	
	C944	QCC21EM-473	0.047MF	25V	CERAMIC	
	C945	QCC31EM-473	0.047MF	25V	CERAMIC	
	C946	QCC31EM-473	0.047MF	25V	CERAMIC	
	C947	QCC31EM-473	0.047MF	25V	CERAMIC	
	C948	QET61HM-105	1MF	50V	ELECTRO	
	C949	QET61HM-105	1MF	50V	ELECTRO	
	C950	QET61HM-105	1MF	50V	ELECTRO	
	C951	QCC21EM-473	0.047MF	25V	CRERAMIC	
	C952	QCC31EM-473	0.047MF	25V	CERAMIC	
	C953	QCC21EM-473	0.047MF	25V	CERAMIC	
	C954	QCC31EM-473	0.047MF	25V	CERAMIC	
	C955	QET51CM-477	470MF	16V	ELECTRO	
	C956	QET51CM-477	470MF	16V	ELECTRO	
	C957	QCC31EM-473	0.047	25V	CRERAMIC	
	C958	QCC21EM-473	0.047MF	25V	CERAMIC	
	C959	QET61HM-105	1MF	50V	ELECTRO	

Resistors

⚠	Item No.	Part Number	Description			Areas
	R101	QRD161J-681	680	1/6W	CARBON	
	R102	QRD161J-102	1K	1/6W	CARBON	
	R103	QRD161J-103	10K	1/6W	CARBON	
	R104	QRD161J-103	10K	1/6W	CARBON	
	R105	QRD161J-102	1K	1/6W	CARBON	
	R106	QRD161J-103	10K	1/6W	CARBON	
	R107	QRD161J-561	560	1/6W	CARBON	
	R108	QRD161J-473	47K	1/6W	CARBON	
	R109	QRD161J-562	5.6K	1/6W	CARBON	
	R110	QRD161J-472	4.7	1/6W	CARBON	
	R111	QRD161J-471	470	1/6W	CARBON	
	R112	QRD161J-102	1K	1/6W	CARBON	
	R113	QRD161J-912	9.1K	1/6W	CARBON	
	R114	QRD161J-222	2.2K	1/6W	CARBON	
	R115	QRD161J-182	1.8K	1/6W	CARBON	
	R116	QRD161J-471	470	1/6W	CARBON	
	R117	QRD161J-222	2.2K	1/6W	CARBON	
	R118	QRD161J-182	1.8K	1/6W	CARBON	
	R122	QVZ3513-471	470		VARIABLE	
	R125	QRD161J-392	3.9K	1/6W	CARBON	B
	R125	QRD161J-392	3.9K	1/6W	CARBON	F
	R126	QRD161J-102	1K	1/6W	CARBON	
	R127	QRD161J-102	1K	1/6W	CARBON	
	R127	QRD161J-102	1K	1/6W	CARBON	
	R128	QRD161J-750	75	1/6W	CARBON	B

Resistors

⚠	Item No.	Part Number	Description			Areas
	R128	QRD161J-750	75	1/6W	CARBON	F
	R129	QRD161J-104	100K	1/6W	CARBON	
	R130	QRD161J-104	100K	1/6W	CARBON	
	R131	QRD161J-681	680	1/6W	CARBON	
	R135	QRD161J-820	82	1/6W	CARBON	
	R136	QRD161J-221	220	1/6W	CARBON	
	R141	QRD161J-331	330	1/6W	CARBON	
	R142	QRD161J-391	390	1/6W	CARBON	
	R143	QRD161J-222	2.2K	1/6W	CARBON	
	R144	QRD161J-471	470	1/6W	CARBON	
	R145	QRD161J-103	10K	1/6W	CARBON	
	R146	QRD161J-102	1K	1/6W	CARBON	
	R147	QRD161J-472	4.7K	1/6W	CARBON	
	R148	QRD161J-272	2.7K	1/6W	CARBON	
	R149	QRD161J-100	10	1/6W	CARBON	
	R150	QRD161J-472	4.7K	1/6W	CARBON	
	R151	QRD161J-102	1K	1/6W	CARBON	
	R158	QRD161J-104	100K	1/6W	CARBON	
	R159	QRD161J-822	8.2K	1/6W	CARBON	
	R160	QRD161J-822	8.2K	1/6W	CARBON	
	R161	QRD161J-512	5.1K	1/6W	CARBON	
	R162	QRD161J-103	100K	1/6W	CARBON	
	R163	QRD161J-104	100K	1/6W	CARBON	
	R164	QRD161J-104	100K	1/6W	CARBON	
	R165	QRD161J-104	100K	1/6W	CARBON	
	R166	QRD161J-474	470K	1/6W	CARBON	
	R167	QRD161J-513	51K	1/6W	CARBON	
	R168	QRD161J-563	56K	1/6W	CARBON	
	R170	QRD161J-393	39K	1/6W	CARBON	
	R171	QRD161J-683	68K	1/6W	CARBON	
	R172	QRD161J-102	1K	1/6W	CARBON	
	R173	QRD161J-101	100	1/6W	CARBON	
	R174	QRD161J-104	100K	1/6W	CARBON	
	R175	QRD161J-331	330	1/6W	CARBON	
	R176	QRD161J-333	33K	1/6W	CARBON	
	R177	QRD161J-182	1.8K	1/6W	CARBON	
	R178	QRD161J-222	2.2K	1/6W	CARBON	
	R179	QRD161J-471	470	1/6W	CARBON	
	R180	QRD161J-104	100	1/6W	CARBON	
	R181	QRD161J-102	1K	1/6W	CARBON	
	R182	QRD161J-561	560	1/6W	CARBON	
	R183	QRD161J-561	560	1/6W	CARBON	
	R184	QRD161J-272	2.7K	1/6W	CARBON	
	R185	QRD161J-272	2.7K	1/6W	CARBON	
	R186	QRD161J-271	270	1/6W	CARBON	
	R187	QRD161J-431	430	1/6W	CARBON	
	R188	QRD161J-152	1.5K	1/6W	CARBON	
	R189	QRD161J-222	2.2K	1/6W	CARBON	
	R190	QRD161J-152	1.5K	1/6W	CARBON	
	R192	QRD161J-102	1K	1/6W	CARBON	B
	R192	QRD161J-102	1K	1/6W	CARBON	F
	R193	QRD161J-121	120	1/6W	CARBON	B
	R193	QRD161J-121	120	1/6W	CARBON	F
	R194	QRD161J-201	200	1/6W	CARBON	B
	R194	QRD161J-201	200	1/6W	CARBON	F

Resistors

⚠	Item No.	Part Number	Description			Areas
	R196	QRD161J-301	300	1/6W	CARBON	B
	R196	QRD161J-301	300	1/6W	CARBON	F
	R197	QRD161J-511	510	1/6W	CARBON	B
	R197	QRD161J-511	510	1/6W	CARBON	F
	R198	QRD161J-471	470	1/6W	CARBON	B
	R198	QRD161J-471	470	1/6W	CARBON	F
	R200	QRD161J-102	1K	1/6W	CARBON	
	R201	QRD161J-223	22K	1/6W	CARBON	
	R205	QRD161J-102	1K	1/6W	CARBON	
	R206	QRD161J-102	1K	1/6W	CARBON	
	R207	QRD161J-102	1K	1/6W	CARBON	
	R208	QRD161J-750	75	1/6W	CARBON	
	R209	QRD161J-102	1K	1/6W	CARBON	
	R210	QRD161J-750	75	1/6W	CARBON	
	R211	QRD161J-681	680	1/6W	CARBON	
	R212	QRD161J-202	2K	1/6W	CARBON	
	R213	QRD161J-301	300	1/6W	CARBON	
	R214	QRD161J-621	620	1/6W	CARBON	
	R216	QRD161J-511	510	1/6W	CARBON	
	R217	QRD161J-103	10K	1/6W	CARBON	
	R218	QRD161J-472	4.7K	1/6W	CARBON	
	R219	QRD161J-472	47K	1/6W	CARBON	
	R220	QRD161J-102	1K	1/6W	CARBON	
	R225	QRD161J-102	1K	1/6W	CARBON	
	R501	QRD161J-473	47K	1/6W	CARBON	
	R503	QRD161J-473	47K	1/6W	CARBON	
	R504	QRD161J-223	22K	1/6W	CARBON	
	R505	QRD161J-223	22K	1/6W	CARBON	
	R506	QRD161J-153	15K	1/6W	CARBON	
	R507	QRD161J-153	15K	1/6W	CARBON	
	R508	QRD161J-273	27K	1/6W	CARBON	
	R509	QRD161J-392	3.9K	1/6W	CARBON	
	R510	QRD161J-472	4.7K	1/6W	CARBON	
	R511	QRV144F-3301A		1/4W	O.M.FILM	
	R512	QRV144F-3301A		1/4W	O.M.FILM	
	R513	QRV144F-3302A		1/4W	O.M.FILM	
	R514	QRV144F-3901A		1/4W	O.M.FILM	
	R515	QRV144F-1200A		1/4W	O.M.FILM	
	R516	QRD161J-392	3.9K	1/6W	CARBON	
	R517	QRD161J-103	10K	1/6W	CARBON	
	R518	QRD161J-104	100K	1/6W	CARBON	
	R519	QRD161J-153	15K	1/6W	CARBON	
	R520	QRD161J-153	15K	1/6W	CARBON	
	R521	QRD161J-223	22K	1/6W	CARBON	
	R522	QRD161J-223	22K	1/6W	CARBON	
	R523	QRD161J-223	22K	1/6W	CARBON	
	R524	QRD161J-223	22K	1/6W	CARBON	
	R525	QRD161J-104	100K	1/6W	CARBON	
	R526	QRD161J-104	100K	1/6W	CARBON	
	R527	QRD161J-104	100K	1/6W	CARBON	
	R528	QRD161J-103	10K	1/6W	CARBON	
	R530	QRD161J-472	4.7K	1/6W	CARBON	
	R531	QRD161J-472	4.7K	1/6W	CARBON	
	R532	QRD161J-153	15K	1/6W	CARBON	
	R533	QRD161J-103	10K	1/6W	CARBON	

Resistors

⚠	Item No.	Part Number	Description			Areas
	R534	QRD161J-472	4.7K	1/6W	CARBON	
	R535	QRD161J-103	10K	1/6W	CARBON	
	R536	QRD161J-104	100K	1/6W	CARBON	
	R537	QRD161J-104	100K	1/6W	CARBON	
	R538	QRD161J-103	10K	1/6W	CARBON	
	R539	QRD161J-103	10K	1/6W	CARBON	
	R540	QRD161J-391	390K	1/6W	CARBON	
	R541	QRD161J-103	10K	1/6W	CARBON	
	R542	QRD161J-101	100K	1/6W	CARBON	
	R543	QRD161J-103	10K	1/6W	CARBON	
	R544	QRD161J-101	100K	1/6W	CARBON	
	R545	QRD161J-102	1K	1/6W	CARBON	
	R546	QRD161J-472	47K	1/6W	CARBON	
	R547	QRD161J-473	47K	1/6W	CARBON	
	R548	QRD161J-333	33K	1/6W	CARBON	
	R549	QVZ3513-104	100K		VARIABLE	
	R550	QRD161J-332	3.3K	1/6W	CARBON	
	R551	QRD161J-332	3.3K	1/6W	CARBON	
	R552	QRD161J-391	390	1/6W	CARBON	
	R553	QRD161J-103	10K	1/6W	CARBON	
	R554	QRD161J-103	10K	1/6W	CARBON	
	R555	QRD161J-332	3.3K	1/6W	CARBON	
	R556	QRD161J-332	3.3K	1/6W	CARBON	
	R557	QRD161J-273	27K	1/6W	CARBON	
	R558	QRD161J-273	27K	1/6W	CARBON	
	R559	QRD161J-123	12K	1/6W	CARBON	
	R560	QRD161J-561	560	1/6W	CARBON	
	R561	QRD161J-561	560	1/6W	CARBON	
	R562	QRD161J-472	4.7K	1/6W	CARBON	
	R563	QRD161J-152	1.5K	1/6W	CARBON	
	R564	QRD161J-152	1.5K	1/6W	CARBON	
	R565	QRD161J-102	1K	1/6W	CARBON	
	R566	QRD161J-102	1K	1/6W	CARBON	
	R567	QRD161J-471	470	1/6W	CARBON	
	R568	QRD161J-472	4.7K	1/6W	CARBON	
	R569	QRD161J-183	18K	1/6W	CARBON	
	R570	QRD161J-152	1.5K	1/6W	CARBON	
	R571	QRD161J-561	560	1/6W	CARBON	
	R576	QRV144F-3901A		1/4W	O.M.FILM	
	R577	QRD161J-105	1M	1/6W	CARBON	
	R578	QRV144F-5600A		1/4W	O.M.FILM	
	R580	QRD161J-103	10K	1/6W	CARBON	
	R581	QRD161J-103	10K	1/6W	CARBON	
	R582	QRD161J-104	100K	1/6W	CARBON	
	R583	QVZ3513-222	2.2K		VARIABLE	
	R584	QRD161J-104	100K	1/6W	CARBON	
	R585	QRD161J-104	100K	1/6W	CARBON	
	R586	QRD161J-273	27K	1/6W	CARBON	
	R587	QRD161J-473	47K	1/6W	CARBON	
	R588	QRD161J-333	33K	1/6W	CARBON	
	R589	QRD161J-102	1K	1/6W	CARBON	
	R590	QRD161J-473	47K	1/6W	CARBON	
	R591	QRV144F-1202A		1/4W	O.M.FILM	
	R596	QRD161J-105	1M	1/6W	CARBON	
	R599	QRD161J-101	100	1/6W	CARBON	

Resistors

⚠	Item No.	Part Number	Description			Areas
	R601	QRD161J-473	47K	1/6W	CARBON	
	R602	QRV161J-223	22K	1/6W	CARBON	
	R603	QRD161J-473	47K	1/6W	CARBON	
	R604	QRD161J-223	22K	1/6W	CARBON	
	R605	QRV161J-223	22K	1/6W	CARBON	
	R606	QRD161J-153	15K	1/6W	CARBON	
	R607	QRD161J-153	15K	1/6W	CARBON	
	R608	QRD161J-273	27K	1/6W	CARBON	
	R609	QRD161J-392	3.9K	1/6W	CARBON	
	R610	QRD161J-472	4.7K	1/6W	CARBON	
	R611	QRV144F-3301A		1/4W	O.M.FILM	
	R612	QRV144F-3301A		1/4W	O.M.FILM	
	R613	QRV144F-3302A		1/4W	O.M.FILM	
	R614	QRV144F-3901A		1/4W	O.M.FILM	
	R615	QRV144F-1200A		1/4W	O.M.FILM	
	R616	QRD161J-392	3.9K	1/6W	CARBON	
	R617	QRD161J-103	10K	1/6W	CARBON	
	R618	QRD161J-104	100K	1/6W	CARBON	
	R619	QRD161J-153	15K	1/6W	CARBON	
	R620	QRD161J-153	15K	1/6W	CARBON	
	R621	QRD161J-223	22K	1/6W	CARBON	
	R622	QRD161J-223	22K	1/6W	CARBON	
	R623	QRD161J-223	22K	1/6W	CARBON	
	R624	QRD161J-223	22K	1/6W	CARBON	
	R625	QRD161J-104	100K	1/6W	CARBON	
	R626	QRD161J-104	100K	1/6W	CARBON	
	R627	QRD161J-104	100K	1/6W	CARBON	
	R628	QRD161J-103	10K	1/6W	CARBON	
	R629	QRD161J-103	10K	1/6W	CARBON	
	R630	QRD161J-172	1.7K	1/6W	CARBON	
	R631	QRD161J-472	4.7K	1/6W	CARBON	
	R632	QRD161J-153	15K	1/6W	CARBON	
	R633	QRD161J-103	10K	1/6W	CARBON	
	R634	QRD161J-472	4.7K	1/6W	CARBON	
	R635	QRD161J-103	10K	1/6W	CARBON	
	R636	QRD161J-104	100K	1/6W	CARBON	
	R637	QRD161J-104	100K	1/6W	CARBON	
	R638	QRD161J-103	10K	1/6W	CARBON	
	R639	QRD161J-103	10K	1/6W	CARBON	
	R640	QRD161J-391	390	1/6W	CARBON	
	R641	QRD161J-103	10K	1/6W	CARBON	
	R642	QRD161J-101	100	1/6W	CARBON	
	R643	QRD161J-103	10K	1/6W	CARBON	
	R644	QRD161J-101	100	1/6W	CARBON	
	R645	QRD161J-102	1K	1/6W	CARBON	
	R646	QRD161J-473	47K	1/6W	CARBON	
	R647	QRD161J-473	47K	1/6W	CARBON	
	R648	QRD161J-33	33K	1/6W	CARBON	
	R649	QRD161J-104	100K		VARIABLE	
	R650	QRD161J-332	3.3K	1/6W	CARBON	
	R651	QRD161J-332	3.3K	1/6W	CARBON	
	R652	QRD161J-391	390	1/6W	CARBON	
	R653	QRD161J-103	10K	1/6W	CARBON	
	R654	QRD161J-103	10K	1/6W	CARBON	
	R655	QRD161J-332	3.3K	1/6W	CARBON	

Resistors

⚠	Item No.	Part Number	Description			Areas
	R656	QRD161J-332	3.3K	1/6W	CARBON	
	R657	QRD161J-273	27K	1/6W	CARBON	
	R658	QRD161J-273	27K	1/6W	CARBON	
	R659	QRD161J-123	12K	1/6W	CARBON	
	R660	QRD161J-561	560	1/6W	CARBON	
	R661	QRD161J-561	560	1/6W	CARBON	
	R662	QRD161J-472	4.7K	1/6W	CARBON	
	R663	QRD161J-152	1.5K	1/6W	CARBON	
	R664	QRD161J-152	1.5K	1/6W	CARBON	
	R665	QRD161J-102	1K	1/6W	CARBON	
	R666	QRD161J-102	1K	1/6W	CARBON	
	R667	QRD161J-471	470	1/6W	CARBON	
	R668	QRD161J-472	4.7K	1/6W	CARBON	
	R669	QRD161J-183	18K	1/6W	CARBON	
	R670	QRD161J-152	1.5K	1/6W	CARBON	
	R671	QRD161J-561	560	1/6W	CARBON	
	R676	QRV144F-3901A		1/4W	O.M.FILM	
	R677	QRD161J-105	1M	1/6W	CARBON	
	R678	QRV144F-5600A		1/4W	O.M.FILM	
	R680	QRD161J-103	10K	1/6W	CARBON	
	R681	QRD161J-103	10K	1/6W	CARBON	
	R682	QRD161J-104	100K	1/6W	CARBON	
	R683	QVZ3513-222	2.2K		VARIABLE	
	R684	QRD161J-104	100K	1/6W	CARBON	
	R685	QRD161J-104	100K	1/6W	CARBON	
	R686	QRD161J-273	27K	1/6W	CARBON	
	R687	QRD161J-473	47K	1/6W	CARBON	
	R688	QRD161J-333	33K	1/6W	CARBON	
	R689	QRD161J-102	1K	1/6W	CARBON	
	R690	QRD161J-473	47K	1/6W	CARBON	
	R691	QRV144F-1202A		1/4W	O.M.FILM	
	R696	QRD161J-105	1M	1/6W	CARBON	
	R699	QRD161J-101	100	1/6W	CARBON	
	R901	QRD161J-332	3.3K	1/6W	CARBON	
	R902	QRD161J-123	12K	1/6W	CARBON	
	R903	QRD161J-123	12K	1/6W	CARBON	
	R904	QRD161J-272	2.7K	1/6W	CARBON	
	R905	QRD161J-272	2.7K	1/6W	CARBON	
	R906	QRD161J-332	3.3K	1/6W	CARBON	
	R907	QRD161J-332	3.3K	1/6W	CARBON	
	R908	QRD161J-103	10K	1/6W	CARBON	
	R909	QRD161J-103	10K	1/6W	CARBON	
	R910	QRD161J-472	4.7K	1/6W	CARBON	
	R911	QRD161J-472	4.7K	1/6W	CARBON	
	R912	QRD161J-392	3.9K	1/6W	CARBON	
	R913	QRD161J-392	3.9K	1/6W	CARBON	
	R914	QRD161J-392	3.9K	1/6W	CARBON	
	R915	QRD161J-105	1M	1/6W	CARBON	
	R916	QRD161J-105	1M	1/6W	CARBON	
	R917	QRD161J-105	1M	1/6W	CARBON	
	R918	QRD161J-105	1M	1/6W	CARBON	
	R919	QRD161J-105	1M	1/6W	CARBON	
	R920	QRD161J-152	1.5K	1/6W	CARBON	
	R927	QRD161J-333	33K	1/6W	CARBON	
	R928	QRD161J-100	10	1/6W	CARBON	

Resistors

⚠	Item No.	Part Number	Description			Areas
	R929	QRD161J-472	4.7K	1/6W	CARBON	
	R930	QRD161J-102	1K	1/6W	CARBON	
	R931	QRD161J-102	1K	1/6W	CARBON	
	R932	QRD161J-272	2.7K	1/6W	CARBON	
	R933	QRD161J-183	18K	1/6W	CARBON	
	R934	QRD161J-103	10K	1/6W	CARBON	
	R935	QRD161J-272	2.7K	1/6W	CARBON	
	R936	QRD161J-272	2.7K	1/6W	CARBON	
	R937	QRD161J-682	6.8K	1/6W	CARBON	
	R938	QRD161J-183	18K	1/6W	CARBON	
	R939	QRD161J-183	18K	1/6W	CARBON	
	R940	QRD161J-562	5.6K	1/6W	CARBON	
	R941	QRD161J-562	5.6K	1/6W	CARBON	
	R942	QRD161J-332	3.3K	1/6W	CARBON	
	R943	QRD161J-332	3.3K	1/6W	CARBON	
	R944	QRD161J-103	10K	1/6W	CARBON	
	R945	QRV144F-1202A		1/4W	O.M.FILM	
	R946	QRV144F-1202A		1/4W	O.M.FILM	
	R947	QRD161J-181	180	1/6W	CARBON	
	R948	QRV144F-47R0		1/4W	O.M.FILM	
	R949	QRV144F-47R0		1/4W	O.M.FILM	
	R950	QRD161J-102	1K	1/6W	CARBON	
	R951	QRD161J-104	100K	1/6W	CARBON	
	R952	QRD161J-153	15K	1/6W	CARBON	
	R953	QRD161J-104	100K	1/6W	CARBON	
	R954	QVZ3513-104	100K		VARIABLE	
	R955	QRV144F-1302A		1/4W	O.M.FILM	
	R956	QRV144F-1302A		1/4W	O.M.FILM	
	R958	QRD161J-100	10	1/6W	CARBON	
	R959	QRD161J-100	10	1/6W	CARBON	
	R960	QRD161J-332	3.3K	1/6W	CARBON	
	R961	QRD161J-332	3.3K	1/6W	CARBON	
	R962	QRD161J-332	3.3K	1/6W	CARBON	
	R964	QRD161J-243	24K	1/6W	CARBON	
	R965	QRD161J-101	100	1/6W	CARBON	
	R966	QRD161J-152	1.5K	1/6W	CARBON	
	R967	QRD161J-152	1.5K	1/6W	CARBON	
	R968	QRD161J-152	1.5K	1/6W	CARBON	
	R969	QRD161J-102	1K	1/6W	CARBON	
	R970	QRD161J-222	2.2K	1/6W	CARBON	
	R972	QRD161J-330	33	1/6W	CARBON	
	R973	QRD161J-392	3.9K	1/6W	CARBON	
	R974	QRD161J-392	3.9K	1/6W	CARBON	
	R975	QRD161J-104	100K	1/6W	CARBON	
	R980	QRD161J-153	15K	1/6W	CARBON	
⚠	R981	QRD145J-100S	10	1/4W	UNF.CARBON	
⚠	R982	QRD145J-100S	10	1/4W	UNF.CARBON	
	R983	QRD161J-183	18K	1/6W	CARBON	
	R984	QRD161J-472	4.7K	1/6W	CARBON	
	R985	QRD161J-104	100K	1/6W	CARBON	

Others

⚠	Item No.	Part Number	Description	Areas
	P101	QMV5005-015	PLUG ASS'Y	
	P102	QMV5005-006	6P PLUG ASS'Y	
	P103	QMV5005-003	3P PLUG ASS'Y	
	P104	QMV5005-002	2P PLUG ASS'Y	
	P105	QMV5005-006	6P PLUG ASS'Y	
	P106	QMV5005-006	6P PLUG ASS'Y	C
	P106	QMV5005-006	6P PLUG ASS'Y	D
	P107	QMV5005-004	4P PLUG ASSY	C
	P107	QMV5005-004	4P PLUG ASS'Y	D
	P501	QMV5005-006	6P PLUG ASS'Y	
	P502	QMV5005-003	3P PLUG ASS'Y	
	P503	QMV5005-002	2P PLUG ASS'Y	
	P504	QMV5005-002	2P PLUG ASS'Y	
	P901	QMV5005-002	2P PLUG ASS'Y	
	P902	QMV5005-003	3P PLUG ASS'Y	
	P903	QMV5005-003	3P PLUG ASS'Y	
	X101	ECX2114-688DA	X'TAL	B
	X101	ECX2114-688DA	X'TAL	F
	X101	ECX2114-800DA	X'TAL	E
	X101	ECX2116-800DA	X'TAL	C
	X101	ECX2116-800DA	X'TAL	D
	X102	ECX2114-688DE	X'TAL	B
	X102	ECX2114-688DE	X'TAL	F
	X102	ECX2114-800DE	X'TAL	C
	X102	ECX2116-800DE	X'TAL	D
	X102	ECX2116-800DE	X'TAL	E
	LF101	EQF0108-002	L.P.FILTER	
	LF501	F115D	L.P.FILTER	
	LF601	F115D	L.P.FILTER	
	RY101	ESK5D12-211	RELAY	
	RY102	ESK5D12-211	RELAY	
	RY901	ESK5D12-211	RELAY	
	TP001	Y40600-001	TAB	
	TP002	Y40600-001	TAB	
	TP003	Y40600-001	TAB	
	TP004	Y40600-001	TAB	
	TP005	Y40600-001	TAB	
	TP006	Y40600-001	TAB	
	TP007	Y40600-001	TAB	
	TP008	Y40600-001	TAB	
	TP009	Y40600-001	TAB	
	TP010	Y40600-001	TAB	
	TP011	Y40600-001	TAB	
	TP012	Y40600-001	TAB	
	TP013	Y40600-001	TAB	
	TP014	Y40600-001	TAB	
	TP015	Y40600-001	TAB	
	TP016	Y40600-001	TAB	
	TP017	Y40600-001	TAB	
	TP018	Y40600-001	TAB	
	TP019	Y40600-001	TAB	
	TP020	Y40600-001	TAB	
	TP021	Y40600-001	TAB	
	TP022	Y40600-001	TAB	
	TP023	Y40600-001	TAB	

Others

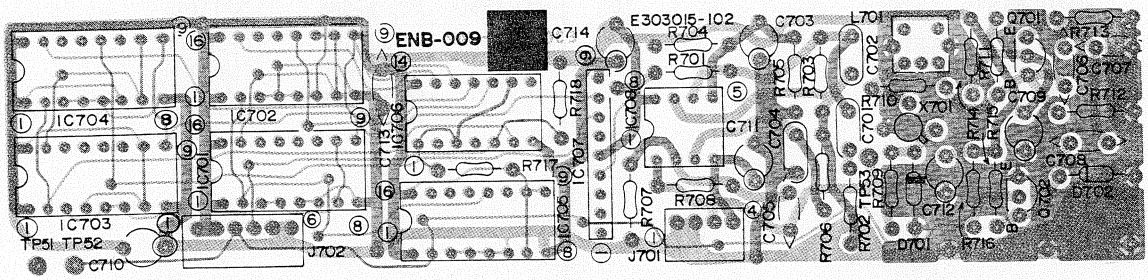
⚠	Item No.	Part Number	Description	Areas
	TP024	Y40600-001	TAB	
	TP025	Y40600-001	TAB	
	TP026	Y40600-001	TAB	
	TP027	Y40600-001	TAB	
	TP028	Y40600-001	TAB	
	TP029	Y40600-001	TAB	
	TP030	Y40600-001	TAB	
	TP031	Y40600-001	TAB	
	TP032	Y40600-001	TAB	
	TP033	Y40600-001	TAB	
	TP034	Y40600-001	TAB	
	TP035	Y40600-001	TAB	
	TP036	Y40600-001	TAB	
	TP037	Y40600-001	TAB	
	TP038	Y40600-001	TAB	
	TP039	Y40600-001	TAB	
	TP040	Y40600-001	TAB	
	TP041	Y40600-001	TAB	
	TP042	Y40600-001	TAB	
	FW501	EWR23C-3NN	FLAT WIRE	
	DL101	EQF0108-001	DELAY LINE	
	T101	EQF0208-007	TANK COIL	
	L101	EQL3201-3R4	INDUCTOR	

2-(2) ENB-009 □ PAL Logic P.C. Board Ass'y

Note: ENB-009 □ varies according to the areas employed. See note (1) when placing an order.

Note (1)

P.C. Board Ass'y	Designated Areas
ENB-009 [A]	for Europe, Australia, West Germany, U.S. Military Market & other Countries in PAL/SECAM
ENB-009 [B]	forU.K. in PAL/SECAM



Transistors

⚠	Item No.	Part Number	Description	Maker	Areas
	Q701	2SC458(C)	SILICON	HITACHI	
	Q702	2SC458(C)	SILICON	HITACHI	

I.C.s

⚠	Item No.	Part Number	Description	Maker	Areas
	IC701	TC40H163P	I.C.		
	IC702	TC40H163P	I.C.		
	IC703	TC40H163P	I.C.		
	IC704	TC40H163P	I.C.		
	IC705	TC74HC163P	I.C.		
	IC706	TC40H004P	I.C.	TOSHIBA	
	IC707	TC5081AP	I.C.	TOSHIBA	
	IC708	TL072CP	I.C.		

Diodes

⚠	Item No.	Part Number	Description	Maker	Areas
	D701	1S2686	SILICON	DAINICHI	
	D702	1S2076-31	SILICON	HITACHI	

Capacitors

⚠	Item No.	Part Number	Description			Areas
	C701	QFN81HJ-102	100pF	50V	M.MYLAR	
	C702	QFN81HJ-473	0.047MF	50V	M.MYLAR	
	C703	QET51CM-476	47MF	16V	ELECTRO	
	C704	QFP81HJ-471	470pF	50V	PLOY	
	C705	QCS21HJ-270	27pF	50V	CERAMIC	
	C706	QCT26SH-151	150pF		CERAMIC	
	C707	QCT26RH-270	27pF		CERAMIC	
	C708	QCT26RH-150	15pF		CERAMIC	
	C709	QET51CM-476	47MF	16V	ELECTRO	
	C710	QET51CM-476	47MF	16V	ELECTRO	
	C711	QET51CM-476	47MF	16V	ELECTRO	
	C712	QET51CM-476	47MF	16V	ELECTRO	
	C713	QCC21EM-473	0.047MF	25V	CERAMIC	
	C714	QET51CM-476	47MF	16V	ELECTRO	

Resistors

⚠	Item No.	Part Number	Description			Areas
	R701	QRD148J-104S	100K	1/4W	CARBON	
	R702	QRD148J-104S	100K	1/4W	CARBON	
	R703	QRD148J-474S	470K	1/4W	CARBON	
	R704	QRD148J-822S	8.2K	1/4W	CARBON	
	R705	QRD148J-822S	8.2K	1/4W	CARBON	
	R706	QRD148J-103S	10K	1/4W	CARBON	
	R707	QRD148J-512S	5.1K	1/4W	C RES.	
	R708	QRD148J-103S	10K	1/4W	CARBON	
	R709	QRD148J-563S	56K	1/4W	CARBON	
	R710	QRD148J-473S	47K	1/4W	CARBON	
	R711	QRD148J-393S	39K	1/4W	CARBON	
	R712	QRD148J-683S	68K	1/4W	CARBON	
	R713	QRD148J-102S	1K	1/4W	CARBON	
	R714	QRD148J-101S	100K	1/4W	CARBON	
	R715	QRD148J-104S	100K	1/4W	CARBON	
	R716	QRD148J-331S	330	1/4W	CARBON	
	R717	QRD148J-103S	10K	1/4W	CARBON	

Others

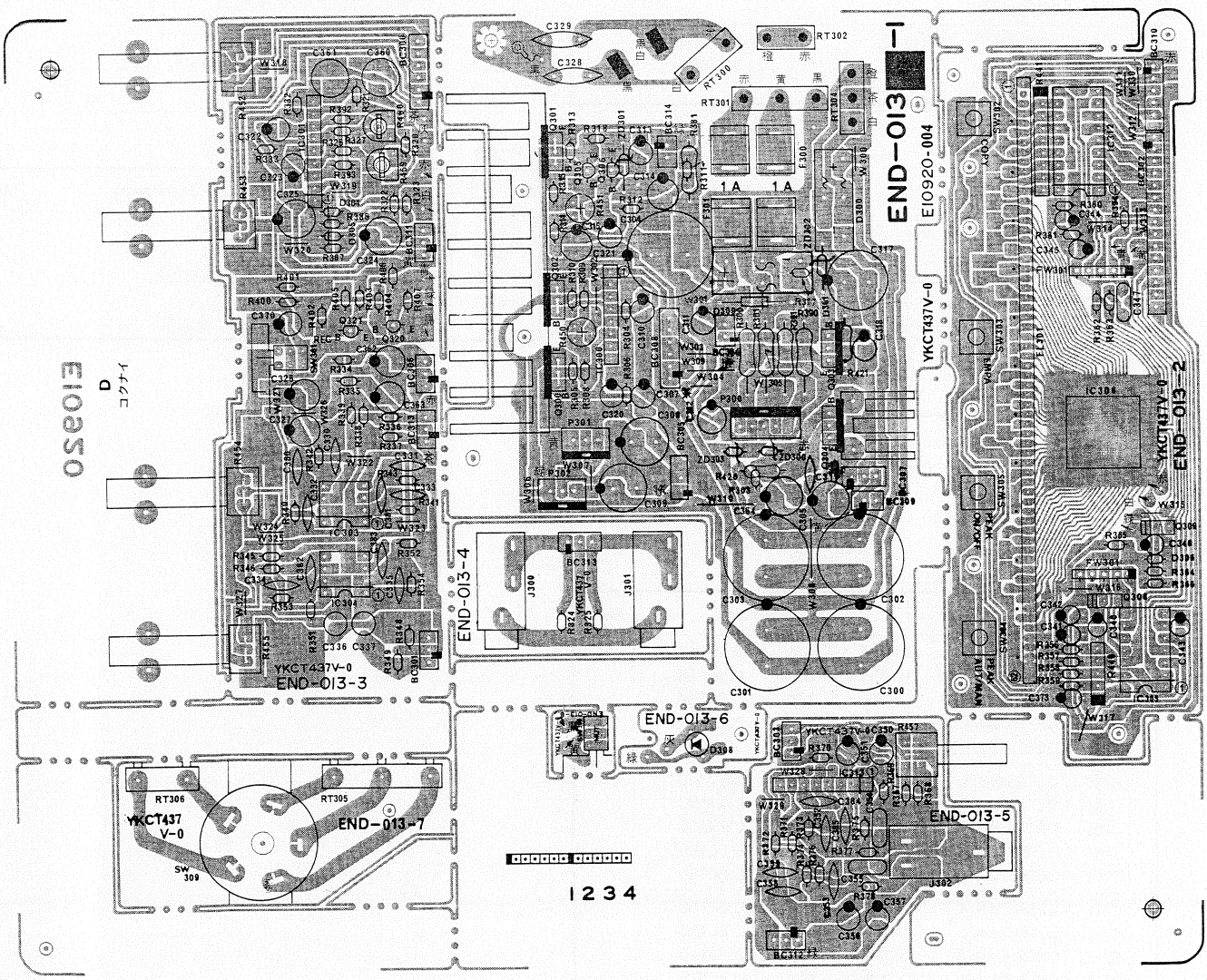
⚠	Item No.	Part Number	Description	Areas
	L701	EQL3201-3R4	INDUCTOR	
	J701	E04370-004B	4P SOKET	
	J702	E04370-006B	6P CONNECTOR	
	X701	CX2100-000DE	X.TAL	
		E303015-101	CIRCUIT BOARD	

2-(3) END-013 □ Amp & Power Supply P.C. Board Ass'y

Note: END-013 □ varies according to the areas employed. See note (1) when placing an order.

Note (1)

P.C. Board Ass'y	Designated Areas
END-013 B	for U.S.A. in NTSC
END-013 C	for U.K. in PAL/SECAM
END-013 D	for Europe, Australia & West Germany in PAL/SECAM
END-013 E	for U.S. Military Market & other Countries in PAL/SECAM



Transistors

⚠	Item No.	Part Number	Description	Maker	Areas
	Q300	2SB941A(P,Q)	SILICON	MATSUSHITA	
	Q301	2SB941A(P,Q)	SILICON	MATSUSHITA	
	Q302	2SD1265A(O,P)	SILICON	MATSUSHITA	
	Q303	2SB941A(P,Q)	SILICON	MATSUSHITA	
	Q304	2SD687	SILICON	TOSHIBA	
	Q305	2SC458(C,D)	SILICON	HITACHI	
	Q306	2SC458(C,D)	SILICON	HITACHI	
	Q308	DTC144F	SILICON		
	Q309	DTC144F	SILICON		
	Q320	2SC458(C,D)	SILICON	HITACHI	
	Q321	2SC458(C,D)	SILICON	HITACHI	

I.C.s

⚠	Item No.	Part Number	Description	Maker	Areas
	IC300	M5230L-04	I.C.	RYOYO	
	IC301	TA7318P(1)	I.C.	TOSHIBA	
	IC303	LM833AN	I.C.	DAINICHI	
	IC304	LM833AN	I.C.	DAINICHI	
	IC305	TC4584BP	I.C.	TOSHIBA	
	IC306	LC7550	I.C.	SANYO	
	IC313	M5218L	I.C.	RYOYO	

Diodes

⚠	Item No.	Part Number	Description	Maker	Areas
	D300	S1RBA20F1	SILICON	SHINDENGEN	
	D301	S1RBA20F1	SILICON	SHINDENGEN	
	D304	1SS119-02	SILICON	HITACHI	
	D305	1SS119-02	SILICON	HITACHI	
	D306	1SS119-02	SILICON	HITACHI	
	D308	SLR-55DC20F	SILICON		
	D309	10E2FA-1	SILICON		
	ZD300	MTZ6.2JC	ZENER		
	ZD301	RD3.3EB2	ZENER	NEC	
	ZD302	RD5.6EB2	ZENER	NEC	
	ZD303	MTZ6.2JC	ZENER		

Capacitors

⚠	Item No.	Part Number	Description			Areas
	C301	QETB1EM-338	3300MF	25V	ELECTRO	
	C302	QET51EM-338	3300MF	25V	ELECTRO	
	C303	QET51EM-338	3300MF	25V	ELECTRO	
	C304	QEH51CM-478	4700MF	16V	ELECTRO	
	C305	QEH51CM-107	100MF	16V	ELECTRO	
	C306	QET61EM-476	47MF	25V	ELECTRO	
	C307	QEH51HM-105	1MF	50V	ELECTRO	
	C308	QEH51CM-227	220MF	16V	ELECTRO	
	C309	QEH51CM-227	220MF	16V	ELECTRO	
	C310	QEH51HM-105	1MF	16V	ELECTRO	

Capacitors

⚠	Item No.	Part Number	Description			Areas
	C311	QEH51CM-226	22MF	16V	ELECTRO	
	C312	QEH51AM-107	100MF	10V	ELECTRO	
	C313	QEH51AM-476	47MF	10V	ELECTRO	
	C314	QEH51CM-476	47MF	16V	ELECTRO	
	C315	QEH51AM-107	100MF	10V	ELECTRO	
	C317	QEH51CM-108	1000MF	16V	ELECTRO	
	C318	QEH51AM-476	47MF	50V	ELECTRO	
	C319	QCF31Hp-473	0.047MF	50V	CERAMIC	
	C320	QEH51HM-105	1MF	50V	ELECTRO	
	C321	QEH51HM-105	1MF	50V	ELECTRO	
	C322	QET61HM-105	1MF	50V	ELECTRO	
	C323	QET61HM-105	1MF	50V	ELECTRO	
	C324	QET61CM-476	47MF	16V	ELECTRO	
	C325	QET61CM-476	47MF	16V	ELECTRO	
	C326	QET61CM-476	47MF	16V	ELECTRO	
	C327	QET61CM-476	47MF	16V	ELECTRO	
	C328	QCZ9019-471	470pF		CERAMIC	
	C330	QCC31EM-473	0.047MF	25V	CERAMIC	
	C331	QCC31EM-473	0.047MF	25V	CERAMIC	
	C332	QCS31HJ-560	56pF	50V	CERAMIC	
	C333	QCS31HJ-560	56pF	50V	CERAMIC	
	C334	QCS31HJ-101	100pF	50V	CERAMIC	
	C335	QCS31HJ-101	100pF	50V	CERAMIC	
	C336	QEN61HM-225	2.2MF	50V	NON POLE	
	C337	QEN61HM-225	2.2MF	50V	NON POLE	
	C340	QER51HM-474	0.47MF	50V	ELECTRO	
	C341	QER51HM-474	0.47MF	50V	ELECTRO	
	C342	QER51HM-474	0.47MF	50V	ELECTRO	
	C343	QER51HM-474	0.47MF	50V	ELECTRO	
	C344	QER51EM-475	0.47MF	50V	ELECTRO	
	C345	QER51EM-475	4.7MF	25V	ELECTRO	
	C346	QER51EM-106	10MF	25V	ELECTRO	
	C347	QFN31HJ-102	1000pF	50V	MYLAR	
	C350	QET61HM-475	4.7MF	50V	ELECTRO	
	C351	QET61HM-475	4.7MF	50V	ELECTRO	
	C352	QCS31HJ-151	150pF	50V	CERAMIC	
	C353	QCS31HJ-151	150pF	50V	CERAMIC	
	C354	QFN31HJ-682	6800pF	50V	MYLAR	
	C355	QFN31HJ-682	6800pF	50V	MYLAR	
	C356	QET61HM-475	4.7MF	50V	ELECTRO	
	C357	QET61HM-475	4.7MF	50V	ELECTRO	
	C358	QCC31EM-473	0.047MF	25V	CERAMIC	
	C359	QCC31EM-473	0.047MF	25V	CERAMIC	
	C360	QEN61HM-106	10MF	50V	NON POLE	
	C361	QEN61HM-106	10MF	50V	NON POLE	
	C362	QET61CM-476	47MF	16V	ELECTRO	
	C363	QET61CM-476	47MF	16V	ELECTRO	
	C370	QET61EM-106	10MF	50V	ELECTRO	
	C373	QCC31EM-473	0.047MF	25V	CERAMIC	
	C380	QCS31HJ-221	220pF	50V	CERAMIC	
	C383	QSC31HJ-221	220pF	50V	CERAMIC	
	C384	QCS31HJ-101	100pF	50V	CERAMIC	
	C385	QCS31HJ-101	100pF	50V	CERAMIC	

Resistors

⚠	Item No.	Part Number	Description			Areas
⚠	R300	QRG022J-510A	51	2W	O.M.FILM	
⚠	R301	QRG022J-510A	51	2W	O.M.FILM	
	R310	QRD161J-680	68	1/6W	CARBON	
	R311	QRD161J-102	1K	1/6W	CARBON	
	R312	QRD161J-562	5.6K	1/6W	CARBON	
	R313	QRD161J-820	82	1/6W	CARBON	
	R314	QRD161J-223	22K	1/6W	CARBON	
	R315	QRD161J-103	10K	1/6W	CARBON	
	R317	QRD161J-102	1K	1/6W	CARBON	
	R318	QRD161J-471	470	1/6W	CARBON	
	R320	QRD161J-222	2.2K	1/6W	CARBON	
	R321	QRD161J-222	2.2K	1/6W	CARBON	
	R322	QRD161J-152	1.5K	1/6W	CARBON	
	R323	QRD161J-152	1.5K	1/6W	CARBON	
	R324	QRD161J-103	10K	1/6W	CARBON	
	R325	QRD161J-103	10K	1/6W	CARBON	
	R326	QRD161J-224	220K	1/6W	CARBON	
	R327	QRD161J-224	220K	1/6W	CARBON	
	R330	QRD161J-822	8.2K	1/6W	CARBON	
	R331	QRD161J-822	8.2K	1/6W	CARBON	
	R332	QRD161J-391	390	1/6W	CARBON	
	R333	QRD161J-391	390	1/6W	CARBON	
	R334	QRD161J-331	330	1/6W	CARBON	
	R335	QRD161J-331	330	1/6W	CARBON	
	R336	QRD161J-681	680	1/6W	CARBON	
	R337	QRD161J-681	680	1/6W	CARBON	
	R338	QRD161J-223	22K	1/6W	CARBON	
	R339	QRD161J-223	22K	1/6W	CARBON	
	R340	QRD161J-104	100K	1/6W	CARBON	
	R341	QRD161J-104	100K	1/6W	CARBON	
	R342	QRD161J-102	1K	1/6W	CARBON	
	R343	QRD161J-102	1K	1/6W	CARBON	
	R345	QRD161J-682	6.8K	1/6W	CARBON	
	R346	QRD161J-682	6.8K	1/6W	CARBON	
	R348	QRD161J-104	100K	1/6W	CARBON	
	R349	QRD161J-104	100K	1/6W	CARBON	
	R351	QRD161J-103	10K	1/6W	CARBON	
	R352	QRD161J-103	10K	1/6W	CARBON	
	R353	QRD161J-223	2K	1/6W	CARBON	
	R354	QRD161J-223	22K	1/6W	CARBON	
	R356	QRD161J-473	47K	1/6W	CARBON	
	R359	QRD161J-473	47K	1/6W	CARBON	
	R360	QRD161J-474	470K	1/6W	CARBON	
	R361	QRD161J-474	470K	1/6W	CARBON	
	R362	QRD161J-242	2.4K	1/6W	CARBON	
	R363	QRD161J-563	56K	1/6W	CARBON	
	R364	QRD161J-223	22K	1/6W	CARBON	
	R365	QRD161J-103	10K	1/6W	CARBON	
	R366	QRD161J-103	10K	1/6W	CARBON	
	R367	QRD161J-511	510	1/6W	CARBON	
	R368	QRD161J-511	510	1/6W	CARBON	
	R369	QRD161J-103	10K	1/6W	CARBON	
	R370	QRD161J-103	10K	1/6W	CARBON	
	R371	QRD161J-123	12K	1/6W	CARBON	
	R372	QRD161J-123	12K	1/6W	CARBON	

⚠ Safety Parts

Resistors

⚠	Item No.	Part Number	Description			Areas
	R373	QRD161J-473	47K	1/6W	CARBON	
	R374	QRD161J-473	47K	1/6W	CARBON	
	R375	QRD161J-680	68	1/6W	CARBON	
	R376	QRD161J-680	68	1/6W	CARBON	
	R377	QRD161J-390	39	1/6W	CARBON	
	R378	QRD161J-390	39	1/6W	CARBON	
	R381	QRG012J-561A	560	1W	O.M.FILM	
	R386	QRD161J-473	47K	1/6W	CARBON	
	R387	QRD161J-473	47K	1/6W	CARBON	
⚠	R390	QRG022J-181A	180	2W	O.M.FILM	
⚠	R391	QRG022J-181A	180	2W	O.M.FILM	
	R392	QRD161J-105	1M	1/6W	CARBON	
	R393	QRD161J-105	1M	1/6W	CARBON	
	R394	QRD161J-103	10K	1/6W	CARBON	
	R394	QRD161J-103	10K	1/6W	CARBON	
	R400	QRD161J-561	560	1/6W	CARBON	
	R401	QRD161J-393	39K	1/6W	CARBON	
	R402	QRD161J-103	10K	1/6W	CARBON	
	R403	QRD161J-103	10K	1/6W	CARBON	
	R404	QRD161J-103	10K	1/6W	CARBON	
	R405	QRD161J-154	150K	1/6W	CARBON	
	R406	QRD161J-123	12K	1/6W	CARBON	
	R407	QRD161J-472	4.7K	1/6W	CARBON	
⚠	R420	QRD145J-3R3S	3.3K	1/4W	UNF.CARBON	
⚠	R421	QRD145J-150S	15	1/4W	UNF.CARBON	
	R440	QRGS4XK-334			ARRAY	
	R441	ERGS8XK-103			ARRAY	
	R450	QVZ3513-222	2.2K		VARIABLE	
	R451	QVZ3513-472	4.7K		VARIABLE	
	R454	QVZ1004-001A			VARIABLE	
	R455	QVZ1004-001A			VARIABLE	
	R456	H0651C-222			VARIABLE	
	R457	QVZ1005-001			VARIABLE	
	R459	QVZ3518-472	4.7K		VARIABLE	
	R460	QVZ3518-472	4.7K		VARIABLE	

⚠ Safety Parts

Others

⚠	Item No.	Part Number	Description	Areas
	FL301	ELU0001-022	FL TUBE	
	J302	QMS6302-123	HEADPHONE JACK	
	P300	QMV5005-005	5P PLUG ASSY	
	P301	QMV5005-003	3P PLUG ASSY	
	P302	QMV5005-003	3P PLUG ASSY	
		EA4280-004	HEAT SINK	
		E66342-001	V.S.HOLDER	E
		E69826-H25	HEA SINK	
		EX0020010N90S	SPACER	
		SBSE3008Z	SCREW	

Others

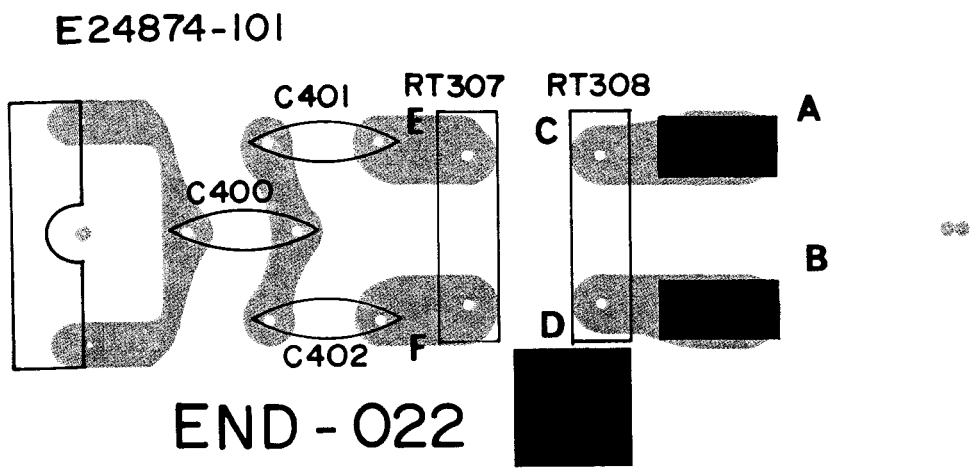
⚠	Item No.	Part Number	Description	Areas
		E65508-022	TAB	
		E65508-022	TAB	
		EMG7331-001	FUSE CLIP	
		E10920-101	CIRCUIT BOARD	B
		E10920-201	CIRCUIT BOARD	C
		E10920-201	CIRCUIT BOARD	D
		E10920-201	CIRCUIT BOARD	E
	RT300	E67764-202	WRAPPING TERMINAL	
	RT301	E67764-103	WRAPPING TERMINAL	
	RT302	E67764-102	TERMINAL ASSY	
	RT304	E67764-003	TERMINAL	
	RT305	E67764-303	WRAPPLNG TERMINAL	E
	RT306	E67764-302	WRAPPLNG TERMINAL	E
	SW300	QSP0219-102	PUSH SWITCH	
	SW301	QSP0219-102	PUSH SWITCH	
	SW302	ESP0001-008	PUSH SWITCH	
	SW305	ESP0001-008	PUSH SWITCH	
⚠	SW309	QSR0074-001	VOLTAGE SELECTOR	E

2-(4) END-022 □ Primary P.C. Board Ass'y

Note: END-022 □ varies according to the areas employed. See note (1) when placing an order.

Note (1)

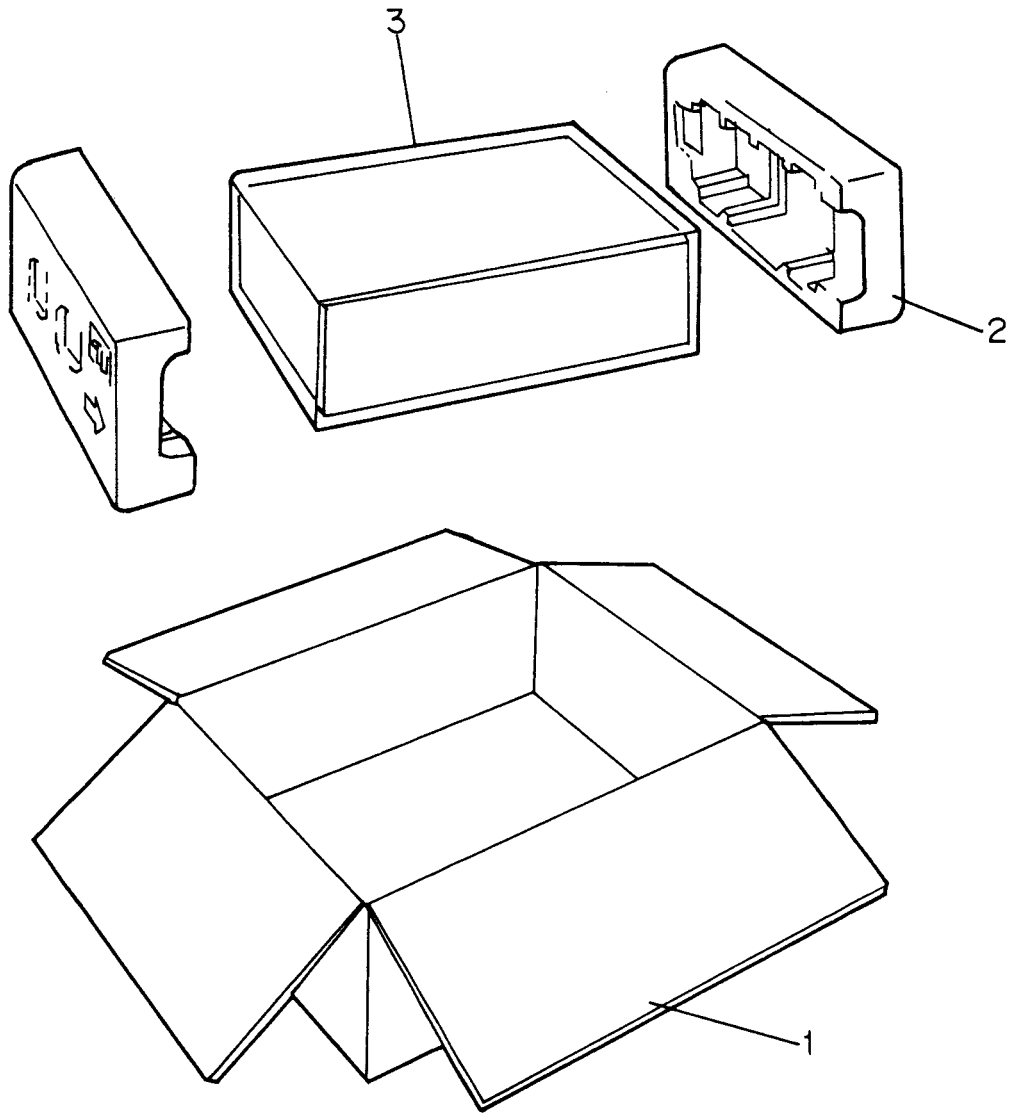
P.C. Board Ass'y	Designated Areas
END-022 [A]	for U.S. Military Market & other Countries in NTSC for Europe, Australia, West Germany, U.S. Militray Market & other Countries in PAL/SECAM
END-022 [B]	for U.K. in PAL/SECAM



Others

⚠	Item No.	Part Number		Description	Areas
		E24874-101		CIRCUIT BOARD	A
		E24874-101BS		CIRCUIT BOARD	BBS
		E65508-002		TAB	
		E70859-001		EARTH PLATE	
	C400	QCZ9019-102A	1K	CERAMIC	A
	C400	QCZ9019-102ABS	1K	CERAMIC	BBS
	C401	QCZ9019-102A	1K	CERAMIC	A
	C401	QCZ9019-102ABS	1K	CERAMIC	BBS
	C402	QCZ9019-102A	1K	CERAMIC	A
	C402	QCZ9019-102ABS	1K	CERAMIC	BBS
	RT307	E67764-202		WRAPPING TERMINAL	
	RT308	E67764-202		WRAPPING TERMINAL	

3. Packing Materials and Parts List



Item	Part Number	Part Name	Description	Areas
1	PK-VP100BE	Packing Case		J
	PK-VP100EN	Packing Case		NP, NU
	PK-VP100EP	Packing Case		PSA, PSBS, PSG, PSE, PSPG, PSU
2	NZ-VP100E	Packing Pad		
3	E36997-119	Protect Sheet		J
	E68142-008	Protect Sheet		Except J, PSBS
	E68142-008B	Protect Sheet		PSBS

Accessories List

⚠	Part Number	Part Name	Description	Areas
	E30580-1158A	Instruction Book		J, NP, NU
	E30580-1220A	Instruction Book		PSA, PSG, PSE, PSU, PSPG
	E30580-1220ABS	Instruction Book		PSBS
	E41202-2	Envelope		Except PSBS
	E41202-2B	Envelope		PSBS only
	E03479-0001B	Signal Cord	ANALOG	
	EWP302--005	Signal Cord	VIDEO	J, NP, NU
	EWP304-005	Pin Cord	VIDEO	PSA, PSBS, PSE, PSG, PSPG, PSU
	BT20048A	Warranty Card		J, NP, PSPG
	BT20029C	Warranty Card		PAS
	BT20064	Warranty Card		PSG
	BT20060	Warranty Card		PSBS
	BT20066	EEC Agency		PSG, PSBS
	BT20044D	Safety instruction Sheet		J
	BT20046B	Service Information Card		J, NP, PSG
	E66416-003	Envelope		J
	BT20054-005A	FTZ Information Sheet		PSG
	QZL1001-006	UL Label		J
	QZL1005-002	Label		PSBS
	E70028-001	Approval Label		PSE
	E70419-001	F. Mark Label		PSG
	E60965-001BS	Warning Label		PSBS
	E33754-001	Tie Band		PSBS
	E49267-001	Marking label		PSBS
	E71806-001	Label		NP, NU
	E71806-003	Label		PSA, PSBS, PSG, PSE, PSPG, PSU
	E354P7-013	Caution Sheet	110V	NP
	E354P7-015	Caution Sheet	220V	NU, PSPG, PSU
⚠	QMF51A2-R315L	Fuse		NP
⚠	QMF51A2-R63L	Fuse		NU, PSPG, PSU
	E6581-4	Envelope		NP, NU, PSPG, PSU

⚠: Safety Parts